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ABSTRACT

The report presents information from a survey of the needs and characteristics of children with severe communication disorders in Ontario and the programs available to serve them. It is explained that information was gathered from structured interviews with principals, teachers, and 28 parents of language handicapped children, as well as visits to 72 agencies or schools. Initial chapters focus on the scope and purpose of the study, criteria for selecting children as language handicapped, and research on seven topics (sample subtopics in parentheses): normal child language acquisition and development (linguistic basis of research, phonological development, semantics); language delay and deviation; early childhood autism and language disorder (echolalia and pronoun reversal, prevalence of autism); developmental language disorder (cause/nature of aphasia, difference between aphasia and autism in language function); assessment of language disabilities (test reliability and validity, language samples, future needs in assessment); programs (content, structure, sequence); and analysis and selection of language programs (use of alternative symbol systems, specific behavior management strategies). Part II presents the empirical data for the following topic areas (sample subtopics in parentheses): methodology, assumptions, and background of the study; characteristics and needs of study children (interrelationships of administrative, educational, and diagnostic factors); language behavior of children (general findings on language level and fluency); program organization, staff, and resources (teachers' views on developments and improvements); the mail sample analysis of programs; and parents' views (suggested improvements in program, family changes resulting from the handicapped). Two final chapters review programs in Ontario and abroad for language disordered children. (CL)

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AN INVESTIGATION OF THE CHARACTERISTICS, DISTRIBUTION AND PROGRAM NEEDS OF CHILDREN WITH SEVERE COMMUNICATION DISORDERS

U.S. DEPARTMENT OF HEALTH,
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Abstract

This study was committed to review the needs and characteristics of children with severe communication disorders in the Province of Ontario, and to review the programs available for them.

The study took the form of a survey of existing practice. It employed structured interviews of principals and teachers, or others, in direct contact with teaching the language program. Interviews were carried out in the homes of 28 parents of language-handicapped children to ascertain their views.

Seventy-two schools/agencies were visited, at least one being included from most of the regional area (offices) of the Ministry of Education. Special or regional programs dealing with autistic or aphasic children were included. Programs in regular elementary schools were studied, and a selection of programs in special preschool units, in two centres for developmentally handicapped children, and in two regional centres for the mentally retarded.

For purposes of comparison, 44 schools or agencies which could not be visited were asked to complete and mail four adapted questionnaire/schedules.

Twenty-eight parents were interviewed to get their views and a random sample of 24 was contacted by mail. Study visits were made to schools and authorities in language disorder in the United Kingdom and in the United States.

Four basic questionnaires were used to guide interviews in Ontario:
Schedule 1/1 - characteristics of the child and his history,
Schedule 2/1 - principal's description of organization, program and background of program,
Schedule 3/1 - language responses of the child in his program, reported by teacher/therapist,
Schedule 4/1 - teacher's description and analysis of program.

The information was analyzed statistically. This was the backbone of the Report. Case histories of specific programs were prepared. Descriptions of interesting or innovative programs observed in Ontario and in study visits were prepared.

Children with severe communication disorder were identified by the participating boards of education and facilities following outline guidelines defining children with severe, specific language disorder and related handicap groups who were placed in the special language program. A further brief checklist guided choice. There was detailed discussion of the choice of participating programs and children before final decisions were reached. Classes studied covered the complete range of handicap categories from slow-learning to specific learning disability.

Findings were established on the sex, age, ability level, socio-economic status, and diagnostic category of the children. Significant relationships were between age and diagnosis, ability level and diagnosis. Specific but variable patterns of relationship were found between the major factors and diagnostic groups.

A major finding was the heterogeneity of the handicap groups which contain the language-handicapped child, and of the language-disordered group itself. In the specific language-handicapped group, 49 autistics were identified, 56 aphasics, and 153 children with a considerable variety of language delay/disorder. Prevalence of language handicap could not be established within the conditions of this study, but some 3 per 10,000 children in the area pertaining to the study were identified as language-disordered, autistic, or aphasic, and approximately 7 per 10,000 in total were found in the units studied.

Analysis of programs recorded staffing, qualifications and background of staff, organization and grouping, the goals, and the programs and materials used. Major goals were language competence and adaptive/social skills and academic progress. Organization was based on both group and individual approaches.

The content of program covered both developmental and structured approaches. Few programs were based explicitly on linguistic principles. A wide variety of materials was used. The program and materials in many classrooms had many similarities with those in special education classes, including a general academic emphasis. Approaches varied but emphasized direct instruction.

The background and qualifications of teachers tended to be in slow-learning and hearing handicap, not just in language. Evaluation of the general effectiveness of program was rarely obtained.

The records of children varied considerably in comprehensiveness. Assessment/intake procedures made use of a variety of approaches including teachers' assessments and standardized tests; progress reviews emphasized classroom assessment. There appeared to be no uniform or systematic arrangements for evaluation of progress or program. Though a variety of language tests was used, most use is made of a small number of general ability and vocabulary tests.

Parents expressed a range of views about their satisfaction with programs, information about the child, and co-operation with the school. These were, on the whole, positive, but included critical responses on information and co-operation.

Teachers and principals appeared to be satisfied with present training, but recommendations were made for more practical forms of training and the need for specific preparation for teaching language.

Observations suggest that those concerned with language programs need to know more about language development in normal and handicapped children, the principles of selecting language programs, and the variety of programs and instructional techniques now available.

PART I

INTRODUCTION

1 The Purpose and Scope of the Research Project

1.1 The Aims of the Study

1.1.1 The aims of this study are:

a) to examine the needs and characteristics of children of school age in Ontario who have severe communication disorders;

b) to describe the programs available to meet their needs;

c) to make what evaluation of them is possible or is available from the schools or agencies;

d) to gather information on their relevance to individual children or specific groups with a given level or kind of language handicap. This includes a review of programs being developed or alternative programs which appear to have value here or in other countries.

e) a summary in the form of an advisement to the Minister of Education is being prepared, to enable the development of practical policies and guidelines for boards of education and those working with children who have communication disorders.

1.1.2 The study is not a study of the prevalence of communication disorders. It is not a diagnostic or clinical study of specific individuals or groups, though information has been gathered on each individual entering the study. It is not a study of causes or etiology, though information on these factors is reviewed. It was not felt appropriate, at this stage in research on a very heterogeneous and little-studied group, to re-define diagnostic categories, or re-diagnose children who have already been classified by workers in the field as language-disordered.

1.1.3 This is not a study of language acquisition or theories of language or communication; nevertheless, facts about normal language acquisition, and deviation in acquisition, are crucial in understanding children with severe language delay or disorder and these areas are briefly reviewed.

1.2 The Groups Studied: Definition

1.2.1 Children with severe communication disorders are defined as those with severe deviation, disorder or significant delay in acquiring spoken language and the related verbal and non-verbal

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forms of symbolism (e.g. gesture, sign, symbolic play) which underlie language. They were defined as requiring special programs for acquisition or remediation of oral language, or needing to learn alternative forms of communication or media, such as systematic sign language or concrete or pictorial symbols (e.g. Bliss symbol, Non-SLIP). The children entering the study are those with specific difficulties in processing linguistic information i.e. having "central processing" difficulties. That is, they have difficulties in comprehending spoken language (receptive) or in organizing/using spoken language (expressive) in order to communicate. They have difficulties in using spoken language to cope with the normal range of meanings or have failed to acquire the normal range of syntactic/grammatical structures.

They will normally (but not always) fall within the average to above-average range of non-verbal intellectual ability, so that their language handicap is not due to low mental ability. Their language-impairment is the major handicap and not normally the result of some other major handicap. See Rutter (1972) and Kleffner (1973) for definitions.

1.2.2 Children entering the study may also have difficulties in articulating speech but the study was not concerned with children who have simple articulation disorders or immaturities, i.e. disorders of phonology, but otherwise use and comprehend language. This provision eliminates a large number of children who have speech but not language disorders, i.e. many of those normally seen for speech therapy as having speech impediments or immaturities.

1.2.3 Similarly, children who fail to communicate in speech because of motor handicaps, paralysis or dyspraxia, i.e. cerebral palsied or cleft palate children, were initially excluded from the main study.

1.2.4 Severely mentally retarded children were also initially excluded from the main study since it was considered that delay or handicap in language was probably (though not necessarily) due to general retardation or cognitive impairment and that this obscures the factors relating to specific language handicap.

1.2.5 The hearing handicapped group was also eliminated as a whole since language delay for both oral and written language is characteristic of such children and is related to the hearing loss and associated factors in the child and environment. In other words, the language handicap is not a specific disorder existing in its own right as the major single handicap. There are, however, children within this group who are aphasic or with language delays or deficits which are much more severe than would be expected even in relation to the general language retardation of the deaf group. One of the major programs studied consists of a group of such children.

1.2.6 As far as possible, children who have difficulties or delays in language related to their bilingual status, children suffering from marked social or educational disadvantage (e.g. inner city or reserve groups or recent-immigrant groups) were eliminated from the study in order to avoid the confusing effects of social and environmental factors, and to allow the study to concentrate on specific language/communication disorders. Such socio-economic and cultural factors are undoubtedly causative in general language and academic retardation but this was not the concern of the present study. These important factors deserve separate study.

1.2.7 Groups which entered the study are those labelled as "aphasic", "autistic", "communication disorders", "language disorders" or "language deficits or delays". Even with the restriction and exclusions described above, the group entering the study is a very heterogeneous one, as both previous research and the present study show.

1.3 Qualifications to the Definition of "Communication Disorder"

1.3.1 Although the group of children with specific language difficulties has been narrowed down and defined both by positive criteria and by exclusion of other groups as described above, there are major qualifications to be made and these are described below.

1.3.2 One major reason is that the study is basically concerned with programs for children with language disorders, not with diagnostic categories. These programs and alternative media for communication are shared by several different handicapped groups and it is of major interest to see what is common to all groups sharing language handicap, using similar programs, and to see how programs differ in application from group to group, and what can be learned from the development of a program for a specific handicapped group and its possible application to another group. For example, the Bliss Symbol program was developed to meet the needs of the cerebral palsied; it is intended to overcome their difficulties in motor movement and speech articulation. It does have, however, interesting possibilities for other groups and has been extended to severely mentally retarded groups. Similarly, sign language has been adapted for use with a variety of groups whose language disorders may have quite different origins or significance, e.g. mentally retarded, autistic, hearing-handicapped. Study of the common factors and the factors specific to groups in the acquisition or use of these forms of communication is most important in throwing light on the nature of language disorder and of remediation.

1.3.3 Too little is known about the nature of language disorder or delay to allow for dogmatism. The whole area of language disorder is so heterogeneous, and the border between one handicapped group and another so diffuse that it made sense in this study (i) to define as clearly as possible and concentrate on the characteristics and programs of the "classical" specific language-disordered groups but also (ii) to sample and compare with these the other handicapped groups which have also language deviation. It is necessary to explore both sides of the borderlines in order to clearly draw the borders. It should be understood that, in the analysis of data, these other samples are kept separate from the main body of data, not mixed and confused with it. For this reason, samples were drawn of:

1.3.4 Cerebral-palsied and similar groups using alternative systems such as Bliss symbols (Toronto Crippled Children's Centre, other classes);

Severely mentally retarded groups, to see how language programs and alternative systems such as Bliss symbols and sign systems compare and also to look at possible similarities in acquisition of language and failure to acquire language as between the mentally retarded and the specific language-disordered (two developmental day centres, two regional residential centres);

Severely hearing handicapped groups with evidence of specific language difficulties. One of these was a major program for "aphasic" children located in the Sir James Whitney School, a regional centre for the hearing handicapped, Belleville, and necessarily included in the study. The other was a group of about 18 children not labelled aphasic but having language disorder or delay markedly more severe than would be expected even in terms of the norms for the hearing-handicapped, in the Ernest C. Drury School, a regional centre for the hearing handicapped, Milton.

1.3.5 Comparison of these two groups in schools for the hearing handicapped: "labelled" and in a specific language program, and "unlabelled" and in a number of different settings within their school, was felt to be of interest in bringing out common features and needs. It raises the issue of how many hearing-handicapped children with severe language delay are in fact better regarded as having specific language disorder or aphasia, and should be given special treatment for this rather than the general programs for deaf children which may or may not be appropriate to them and, if it has a strong oral language emphasis, could even be harmful. (See the experience of schools dealing with aphasic children, such as Moor House, U.K. and Browning (1972) More detailed discussion of the definition of groups and of criteria is given in Chapter 2. The main point at issue is the need, encountered in this study as a major problem, for quite complex rules of definition.

1.4 The Identification of the Language-disordered Group

1.4.1 One obvious approach to identifying a specific group for study is to set down prior definitions and then screen, apply tests, diagnose and classify children according to external criteria adopted by the study. At this stage of research in language disorder, it was not feasible to do this for various reasons. First, there was not sufficient time in this study if adequate attention was to be given to observing programs. Second, there are still not sufficiently precise criteria for what constitutes language/communication disorder, its causative factors, reliable subclassifications or syndromes. Although tests and assessments have been developed to describe and diagnose receptive and expressive language performance or to identify handicaps, there is no reasonably brief, reliable, and comprehensive form of assessment which would be useful across the very heterogeneous group with which the study is concerned.

1.4.2 Syndromes based on medical-neurological or speech-pathology classifications of disorder, e.g. "aphasia", "anomia", "dyspraxia" vary in their precise interpretation from individual to individual and from time to time within the same profession. Crystal (1976) has argued cogently for defining language handicap in terms of precise language performance, language structures, and levels of development rather than in clinical/neurological or other "syndrome" categories. Adequate samples of the spoken language and other aspects of the repertoire of a child, e.g. play, capacity for imitation, need to be gathered and analysed in terms of communication and language performance, e.g. grammatical structures, meanings, in order to give a precise description of the child's acquisition of language and handicap pattern and to guide rational and specific forms of program intervention.

Furthermore, the aim of the study was to describe the system of identification and provision for language-handicapped children as it now exists, in all its variety, not as restricted and simplified by a prior classification imposed by the research design. In order to find out how those working within the educational system define the problem, it seemed prudent to ask for the definitions and practices used in the field. This reflects the variation in criteria of definition of children as language-disordered and of provision for the children as language-disordered. This is current reality.

1.5 Criteria for Defining Level or Significance of Handicap

1.5.1 It proved difficult to find precise criteria for identifying children as having communication disorder. Practice, and available information, varied from board to board. (Criteria are discussed in more detail in Chapter 2).

1.5.2 In Board of Education areas in which the information available was essentially in a fairly crude form (relying on standard intelligence or language tests such as the Wechsler Intelligence Scale for Children) criteria set were that children should be:

a) at least two years retarded in language level with respect to mental age; or

b) where performance and verbal test scales were available, a difference of 30 I.Q. points or more between these two, with performance level superior to verbal.

1.5.3 This kind of criterion best applied to children up to the age of nine or ten years. It was necessary for the research team to re-classify the group so identified, in order to select, by gathering more specific observations from teachers and other professionals, a more restricted and severely language-disordered group. At the other end of the scale, teachers were asked to select children with extremely limited language (e.g. 50-word vocabulary, two-word sentences (expressive)) or limited response to spoken language as contrasted with gesture and symbolic play. It is suggested in Chapter 2 that a language level of 4½ to 6 years of age is the cut-off point for defining language retardation in terms of acquisition of basic grammatical structures, as suggested by Crystal (1976) in using his language-sampling instrument for establishing levels of development and mastery of linguistic structures.

1.5.4 Because of the dangers of interpretation of an inventory, the criteria were established in direct dialogue with the administrative and professional staff and/or the teachers of each area or agency as far as possible. From September 1976 a brief inventory listing the levels of language behavior indicative of delay or disorder in a child of school age was mailed to participants as a guideline.

The approach adopted in the study was "iterative" i.e. forming or offering a preliminary estimate of what constituted handicap, then correcting this through dialogue with the field and by observation of children. It is hoped that one outcome of the study is to establish the acceptable range of criteria used for defining level/kind of handicap involved in communication disorder.

1.6 Age Range of Children in the Study

1.6.1 The main age-range chosen for the study was school age viz. 6 to 16 years. Whenever priorities were necessary, this was the range studied. Within this range it was found that most provision is at the elementary school level i.e. 6 to 13 years.

1.6.2 It was considered very important to study the early development of children with communication disorders insofar as they were accessible to the educational system (as contrasted with public health, paediatric or other provision). For this reason, the study dealt with samples of pre-school and developmental programs for developmentally retarded, emotionally disturbed, or language-handicapped children, mainly in the Metro Toronto area. At the other end of the scale, adolescents from 16 to 21 years of age were also studied if their programs (such as the autistic program at Kerry's Place, Clarksburg) were informative on the way in which handicapped adolescents were being helped, or the directions in which they might be better helped.

1.7 The Design of the Study

1.7.1 This is a survey and review study, not a psychometric or diagnostic/clinical analysis. The terms of reference of the study were to review the needs, characteristics and in particular the programs of children with communication disorders. The following specific programs were, under the terms of the study, included for special review:

Thistletown Regional Centre, Toronto (autistic residential treatment programs)

Kerry's Place, Clarksburg (autistic adolescents, residential centre)

McHugh School, Ottawa (autistic programs)

Bedford Park Public Elementary School, Toronto (day program for communication disordered children, Metropolitan Toronto)

The Sir James Whitney School, Belleville (aphasic unit)

1.7.2 The programs at the McHugh School have been studied under another contract research to the Ministry of Education conducted by the University of Ottawa. An intensive research study of behavior management/intervention has been completed by Dr. David Hung on a small group of autistic children. This research was also on contract to the Ministry of Education. The present study established communication with these two projects to relate them, at whatever level seems appropriate, to the present study as part of a major program of Ministry-funded research.

1.7.3 In addition to these commitments, it was considered desirable to examine the whole range of provision in the Province as far as feasible, i.e. to review educational provision made by boards of education and by other agencies, by day centres and by residential or hospital units, by boards or agencies in different geographical/cultural areas, with a variety of resources, and with a variety of approaches to defining, identifying and providing programs for this fairly novel and relatively unstudied group. It was crucial to sample the whole province to get a reasonably accurate estimate of the range of present provision and future needs. The present survey sampled at least one example from each of the 12 major Ministry of Education areas in the province, each centred on a regional office of the Ministry from Sudbury to Niagara South, Waterloo County to Ottawa. It therefore represents the range of geographical, rural, urban, cultural and economic factors in the province.

1.7.4 Random sampling was not practical since inclusion in the study depended on the voluntary co-operation of boards of education and other agencies, and, within boards, on the participation of school units and, in turn, consent of parents. Co-operation was in general good, but some boards or facilities declined to enter the study or entered late or under conditions which made it difficult to include them. Six months of the study were absorbed in achieving access and co-operation. With the growing impetus of the study in 1976-77, interest and co-operation increased. It is unfortunate that more time and resources were not available to the study, since it became evident that more boards of education and facilities were then prepared to enter the study than could be accommodated.

1.7.5 The study was mainly restricted again (for practical reasons) to public boards of education, since these are usually the major units in special education in their areas. The Metropolitan Toronto Separate School Board provided a major focus of study for the whole city of Toronto. Despite restrictions on truly random sampling, the data in this study seem reasonably representative of the state of affairs in major areas of the province.

1.8 Research Instruments and Procedures

1.8.1 The decision was taken to examine, from a variety of viewpoints, data which was likely to be fallible and varied. It was also decided that it was important to attach weight to direct observation of children and programs and to the reports and evaluations of administrators and those directly concerned with programs for children with communication disorders (first and second persons) rather than relying on "objective" tests which gave a "third-person" interpretation in terms of the dimensions and preconceptions of the test. This was therefore an observational study.

1.8.2 Information was obtained directly by interview from principals or schools or other administrators responsible for organizing and directing the system i.e. the school, unit, instructional facilities etc. within which the program operated. This gave judgements on goals, facilities, resources, provision for identifying and placing children, for assessing progress, and the kinds of decision involved, in general, in specifying what the handicap is and what programs are made available. Information was obtained directly by interview from teachers and/or professional staff directly responsible for the program

i) on individual children, describing their individual characteristics and apparent needs e.g. age, developmental or mental level, educational level and potential, language status and handicap

ii) descriptions and evaluations of goals, programs and materials used, instructional procedures, organizational patterns, content and sequence of curriculum in language and other areas, whether program was structured, programmed, relied on specific media or materials, was based on behavior management principles or was developmental etc. (See chapter on programs.)

1.8.3 Information from individual children's records was gathered as far as possible: medical and psychological data, developmental, language and educational level, so that some estimate could be made of the child's characteristics, diagnosis, classification of handicap and previous educational history. This was to enable cross-checking and statistical analysis of information under 1.8.2 and 1.8.3.

1.8.4 Direct observation of the program (premises, equipment, materials, organization and procedures in use) was carried out by the research team, normally two members working together but independently in a classroom. Within this program setting, the interaction between children and teacher, or children and children, involving language, was monitored, usually by observation during a morning or afternoon session, gathering randomly sampled 5-minute episodes of class interaction. The records (sample over a given time segment) described

i) the origin of an interaction between teacher and child: who initiated, whether or not it was question, response, explanation, command, etc. and

ii) gave a description of the setting in which the interactions had occurred e.g. oral language lesson, reading, conversational interaction between children or structured language program.

It was not feasible to analyse these records statistically at this stage, but they were used to add to the description of program.

1.8.5 Information was gathered mainly by "structured interviews" based on questionnaires one for principals/ administrators (Schedule 2/1); one for teachers or professionals directly in charge of children (4/1), on program goals, materials, and procedures; and two for each individual child (Schedules 1/1 and 3/1). The aim was to collect data by first-hand interview or observation. Teachers were not required to interpret or complete questionnaires on their own. There was full discussion and dialogue, leading to decisions on data to be entered.

As the study proceeded into the fall of 1976, it became clear that several boards or facilities which wished to be included could not be reached with the time and resources available, because very few children were included in their program, or were scattered over a large number of schools. These respondents were asked to complete condensed "mail order" questionnaires listing the most important data required on the system, program and characteristics of the children.

1.8.6 It proved difficult at this stage to code direct observational data in 1.8.4 except in simple ways e.g. number of interactions, initiation of interaction, proportion of questions, commands, etc. The situations in which the observations were collected varied. These observations also generated a volume of data which had to be condensed; they were used to supplement case study or other systematic interview data on a program.

1.8.7 Additional information was gathered on the language-impaired children by obtaining parental co-operation for home visits to some thirty families in southern Ontario and Toronto during the summer months of 1976. These covered "autistic" and language disordered children from a variety of programs studied in the survey. Information gathered on the child, his program, and the perceptions of the parents is reported in a later chapter. Once again the response was so positive that considerably more work could have been done if time and resources permitted.

1.9 Data Analysis and Presentation

1.9.1 Direct questionnaire and record data were coded and computed to obtain data such as frequency of response, age, diagnostic category, particular categories of program, organization etc. For individual children there was cross-classification of the characteristics and relationships of age, diagnostic category, sex, socio-economic class and ability level. These are discussed in succeeding chapters.

1.9.2 Case history reports were also written for major programs or facilities, summarizing generalizations and trends from questionnaire data, records, and observations.

1.9.3 Data analysis was confined to classifying responses, obtaining simple frequencies and cross-classifications. This gave rise to tables and chi-square or similar estimates of probability. It was considered that the information obtained was based essentially on classification or ranking of judgements and observations. The aim was to inter-relate these categories and match them. More sophisticated procedures seem inappropriate at this point.

1.10 Timetable and Procedures

1.10.1 Field work for the project began in January 1976 and was completed by the end of April 1977. The research team consisted during the first six months of two research workers (4½ days per week) and thereafter of three research workers (4½ days per week) as well as the principal investigator whose main roles were in planning the project, devising instruments, analysing and writing the report. In addition, the project provided for visits to programs outside Ontario.

1.10.2 One visit, by the principal investigator, in three weeks of October 1976, covered 15 facilities or persons in the United Kingdom dealing with autistic or aphasic children, research into language programs, techniques such as systematic sign language or "cued speech". Other visits were carried out to centres in the U.S.A. Materials on language programs were gathered in the U.K. and a small collection made of available structured language programs in the U.S.A., as well as the Fristoe review/catalogue of language-teaching systems and the Missouri Centre catalogue of language tests.

1.10.3 Procedure for the study varied in different geographical areas but generally followed the pattern:

1) Contact with the respondent (board of education, agency, or facility) to explain the scope and purpose of the study, indicate the kind of children to be included and a request for co-operation.

2) Preliminary discussion with the responsible administrators or professional staff of the facility.

3) Permission from the research committee or managing body of the facility to submit the plan of research and have this approved.

4) Approval by the committee or officer responsible for special education or for the particular program.

5) The above steps, at 2, 3, or 4, or all three might involve a meeting of the research staff and/or principal investigator with representatives of the facility.

6) This might lead to meeting with the teachers involved in the project, or contact with individual schools to explain the project in detail, confirm co-operation, and set up specific steps for obtaining consents to proceed in time-tabling interviews and observation. Facilities varied, but a number preferred that principals of schools should give direct consent and become responsible for contacting parents for their co-operation.

7) Parental consent was obtained to include children in the study and obtain release of appropriate information from records and/or record children by videotape.

1.10.4 During the period of active field work, as far as possible information relevant to the facility was fed back to the school. Any useful information (e.g. preliminary information on alternative programs) which had become available during the study and did not identify or compromise any particular facility was exchanged with those who requested this (e.g. bibliographies, indications that particular programs such as Bliss symbol or sign language were being tried in various circumstances, or test references).

1.11 General Aims and Results of the Study

1.11.1 The aims of the study were to describe and analyse current programs for a variety of children of school age who have severe communication disorder as defined above; to describe and categorize the variations in such programs in relation to the characteristics of the "system" in which they operate (location, size, kind of program, media, goals, forms of organization) and to relate the program to the apparent needs and characteristics, as reported, of the handicapped child. Also, as far as possible, the aim was to evaluate programs in terms of their materials and instructional approaches.

1.11.2 Where possible, other evidence was gathered on effectiveness such as the progress of children through the program, time spent by a child in a program and any "outcome" information, if gathered by the school, which would throw light on external effectiveness. The concept "evaluation" was found to be disturbing unless presented in the above context i.e. as judgement by the persons in the system of the appropriateness and apparent effectiveness of program, organization, and instructional approach to meet children's needs, and presentation of their own objective data where available. Some programs e.g. those structured in terms of language (e.g. McGinnis, Distar) stages of achievement, or based on detailed forms of monitoring such as behavior modification procedures, had clear evidence of progress and effectiveness to offer; other assessments were inevitably more general. This was a difficult area in which to work.

1.11.3 As a result of this study, there is no doubt that there is a need for controlled educational trials of specific programs and techniques, matching these to the needs of specific individuals and groups rather than making broad and sweeping "competitive" group comparisons of different programs.

1.11.4 The study is concerned primarily with program and curriculum, not with language theory or direct studies of individual remediation. It concerns itself with the child with communication disorder, a term seen as being wider than oral language disorder i. e. it looks at the contributions of symbolic processes and media which lie outside the strictly verbal or linguistic; e.g. alternative symbols systems or media, which are among the most exciting developments in program materials for children with severe communication difficulties.

1.11.5 These programs are seen in relation to more inclusive educational and developmental goals for teacher and child, in a more general educational setting. That is, the concern of the study is educational, concerned with curriculum analysis and evaluation, and with programs, rather than psychological, clinical, or medical matters or problems related solely to speech pathology. Speech pathology in particular, as an applied discipline drawing on many other basic disciplines, has a considerable contribution to make in diagnosis, planning of remediation, and programming both language and non-verbal communication approaches. But it is one discipline among several--the education and psychological--in planning the curriculum of the child with communication disorder.

1.11.6 In the last two to five years, a considerable variety of language programs has become available, based on a variety of approaches to language content and sequence--syntactic, semantic, conceptual. (See Fristoe (1975), Schiefelbusch & Lloyd (1974)) Programs vary in their degree of structure, and basis for structure, and in the degree to which they are finely graded and programmed or leave considerable choice to the teacher; in the degree to which they are based on developmental principles for entry to remediation and sequence, or on task analysis and behavior modification principles.

1.11.7 There is now more obviously a need for rationale for language programs, based on improved knowledge of the cognitive and linguistic learning of the child and factors such as the role of imitation and of stimulus discrimination. There is a need for wide variety of programs and approaches to fit the variety of needs of the group of children with language disorders. Many of these experimental programs, in fact, appear to be derived from the careful task analysis, consideration of developmental sequence and grading of material which is required by autistic and mentally retarded. The present flexibility and imagination in experimenting with different forms of symbolism and medium makes the present situation hopeful and exciting.

1.11.8 It was evident, from the interaction of the research team with professional staff and teachers at the outset of every contact that there was considerable variation in the definition of concepts of language disorder and the criteria for identifying children with communication disorder, and for evaluating the most appropriate programs. Indeed, one major outcome of every dialogue was to define anew the semantics of communication disorder and arrive at an operational agreement. The whole study, in effect, has been concerned with re-defining through dialogue and the assembly of data the term "communication disorder".

1.11.9 In addition to analysis of data and presentation of case study materials, the study has a practical contribution to make.

1) As noted, the study sets out to describe and evaluate alternative programs and innovative programs being developed not only in Ontario but in other places, and to bring to the notice of practitioners the common ground they share with others, or the value of adopting alternative approaches which appear to have some validation elsewhere.

2) The study set out to gather some of the easily available references on language assessment and programs -- videotape, film, books, etc.

3) The study set out to summarize and briefly evaluate available assessment/test resources in the field of language and to recommend adoption of recently-published instruments based on effective language sampling and use of information on linguistic structures in the child, such as Lee's Developmental Sentence Scoring Test and, in particular, Crystal's grammatical analysis of developmental language structures, which should lead to a more rational and direct choice of level and kind of remedial intervention or program planning.

4) The study reviews in a later chapter language/communication programs which are generally available, and examples of some of these materials will be assembled in a section available for reference at the Centre for Educational Disabilities, University of Guelph.

5) It is hoped later to prepare a "directory" of services and facilities either by name where permitted or by region, indicating in detail the clientele, goals, program choices of major facilities, and board of education services for children with communication disorders.

6) It is hoped to continue and develop, following the life of the project, a helping relationship with parents of autistic children who have participated.

7) A workshop was organized following the completion of the project field work, at which general research on communication disorder was reviewed (not the content of the present report) and participants exchanged information, in the form of videotapes/films and presentations, on their programs. It is hoped that a useful consultative/professional development relationship can be continued between participants and the Centre for Educational Disabilities, University of Guelph.

2 Language as a Focus of Study

2.1 Language as the Focus of Study

2.1.1 The primary concern of this study is *spoken* language disorder. "Language" means processes of coding, controlling, storing and encoding verbal symbols, in understanding and expression. That is, *language* as a central process, *not* speech as such. There are many definitions of language and speech but the following has been adopted from Sheridan (1972):

Speech is "the use of systematized vocalizations to express verbal symbols or words" (Sheridan 1972). Rutter (1972) emphasizes the processes of *articulation* in speech disorder, as contrasted with language disorder.

Language is "the symbolizing or codifying of concepts for the purpose of self-communication regarding past, present and future events, and for inter-personal communication, the latter involving both reception and expression". (Sheridan 1972)

In order to merit the term "language" the symbols must have a systematic relationship to each other, allowing for the creation of an infinite number of new messages which are understandable to all those knowing the language. The system of symbols making up a language can be received or expressed in various non-vocal ways as well as in sounds -- written words, Braille, the manual sign languages, other written or visual symbols, e.g. Bliss symbols.

It is important to state this distinction explicitly since there is otherwise possibility of misunderstanding on what is included as "specific" *language disorder*. This study is concerned with children who have receptive or expressive language disorder, but not necessarily children with *speech* or *articulation* disorder.

A whole range of *speech disorders* was excluded from the scope of the study insofar as these were solely disorders of articulation, failures in motor patterning, programming or production of *speech* as distinct from difficulties in discriminating, categorizing, responding to or producing verbal symbols (i.e. understanding and organizing coherent language).

The subject of study is the syntactic, semantic, and conceptual aspects of the child's language functioning -- forms and meanings in understanding and using language, excluding phonology. This, however, unduly restricts and falsifies the real state of affairs. Many children with underlying difficulties affecting their acquisition and organization of language (syntax) or of meanings and vocabulary (semantics) also display delays or disorder of phonology, i.e. in discriminating or producing significant speech patterns, phonemes, syllables, etc. at a normal level of development.

Conversely, it is quite likely that some children with marked immaturities of deviance of phonology, as shown by their speech production, also show significant deviances in other aspects of language. Ingram (1976), after analysing evidence on gross deviances in phonology in children, suggests that there is a strong link with the other language systems in such cases, and even that remediation of syntax (whether in parallel or on its own) can improve phonology (articulation/pronunciation).

Children in this study are likely to show deviance in more than one or even in all of the systems of language, especially in cases of "language delay"; therefore speech disorder must be included as a possible element of a multiple criterion -- but not on its own, as a specific or isolated handicap.

The authoritative report "Standards for Educators of Exceptional Children in Canada" (the S.E.E.C. Report (1971)) makes communication a central concept in its explanation of handicap.

> "Communication disruption, therefore represents a common thread which runs through all categories of exceptionality."

2.2 Communication Disorders as a Fundamental Aspect of Handicap

2.2.1 Communication disorder is found in varying degrees in most handicaps requiring special education. The hearing handicapped are, by definition, a group who have major disabilities in the acquisition, educational and social use of language. The cerebral palsied group have a high proportion with difficulties of articulation or planning of speech. Evidence suggests that many have language difficulties as well as disorders of motor production. Clearly, a study of language/communication disorders in the widest sense should cover all such groups.

In our present state of no precise definitions, and few agreed procedures of assessment and classification, with a wide variety of children perceived as having language disorder, or language disorder compounded by other disorders, definition and provision for treatment vary from one school system or facility to the next. The effective instruments for diagnosis and assessment have not yet been developed or, if developed, adequately standardized and validated, with the possible exception of Crystal's (1976) "Language Assessment, Remediation and Screening Procedure", or Lee's "Developmental Sentence Structure Analysis" (1974).

The present study, in defining its terms of reference and the identification of the kinds of children to be studied, found within the educational system a variety of perceptions of what is meant by "children with communication or language disorders". It is hoped the study will lead to official guidance on how to define language disorders.

2.3 The Definition of Communication Disorder

2.3.1 It is necessary to know more about the nature of language disorder and remediation to ascertain how far it follows the same pattern in different groups. The most useful strategy seems to be to discover more about language disorder in groups where language is the major or specific handicap.

It has taken two hundred years for the concept of hearing handicap to be fully established as a clear and specific pattern of handicap. Prior to the establishment of schools for the "deaf" and the development of manual or oral methods of educating the deaf, they were confused with the mentally retarded and/or the mentally disturbed, not only by the common man but by professional opinion. (see Hewett (1977)) Similar problems of perception and labelling of particular groups as having specific disabilities, differing in or having particular patterns of causation for their difficulties (e.g. genetic as against biochemical or environmental) have recurred throughout the history of special education. The "disadvantaged" shared membership with "slow learners" in terms of education retardation until approximately the last 25 years. The "childhood autism syndrome" as a specific group was isolated only 30 years ago and is still the subject of debate. (Kanner (1943), Wing (1976))

When negotiating with boards of education and other responsible professional experts over which children were appropriate for the study, it was often necessary to expand the written guidelines and criteria by detailed dialogue referring to specific exemplars of the group being studied, to establish common ground on who should be included and why, and who should be excluded as not falling within the main focus of classification as language-disordered. This negotiation was an active process of definition and an arrival at agreement on terms; it was an exercise in establishing a semantic framework common to this study and to the participating representatives of the educational system. In effect, if provisional agreement on what should be regarded as "language disordered children" did not exist explicitly before the dialogue, it emerged as the result of the dialogue.

2.4 The Groups Entering the Study

2.4.1 What are the kinds of group to be included in the study? They are:

1) The group termed "aphasic" or "developmental language disordered" with more or less severe early difficulties in acquiring, comprehending, or expressing oral language.
2) Early childhood autism since this group contains a high proportion of children with severe language and communication disorders, increasingly viewed in recent years (Wing (1976)) as having a fundamental disorder of language acquisition and use and symbolic processing.
3) A variety of language disorders or delays due to developmental or cognitive deviance, neurological or other forms of damage, or traumatic effects of disease or accident in early childhood.

The purpose of the study was to observe and analyze the characteristics and needs of children in groups such as the above, as perceived and classified by the educational system. Such information was to be used to arrive at the main purpose of the study:

1) Description and interpretation of the facilities and programs available for such children.

2) Their apparent match to the needs of these groups or individual children.

3) Perceptions and evidence from a variety of people, working within the system, on the value and effectiveness of such programs, and

4) The recording of possible improvements and innovations.

Questions from the field were concerned with the definition of the population to be studied, and in particular that variety of children perceived as having language disorder or delay who might not be in the "classical" group above. To simplify the issue of the borderzone groups and individuals, the following were excluded in preliminary definition and discussion:

2.5 Provisional Exclusion of Specific Groups, and Qualifications About These Decisions

2.5.1 1) Children suffering from social/educational disadvantage which affected language development such as the inner city group or children from new Canadian or bilingual groups who showed poor language development in English or French, whichever was the mother tongue. There probably is a large group of children whose learning is adversely affected by environmental, economic, social or familial circumstances. The criterion was whether original language functioning (mother tongue) was reasonably intact or normal even if language in school appeared immature. Poor performance in the mother tongue as well as English would indicate a "real" language dysfunction, and such a child would be correctly included as having a specific language disorder.

As far as the research team were aware, after preliminary discussion and sorting, very few children were included who were merely disadvantaged or had deviant dialect or local speech variations, or were simply bilinguals not effective in the second language.*

2) The second major group excluded during the first round was the severely mentally retarded. It is generally believed from research evidence that the immaturities/difficulties of speech is likely to be caused by their general low level of cognitive functioning and is not "specific". The situation is by no means so clear-cut; hence, there was later discussion of the need to sample this group.

3) The third group excluded on first consideration were the hearing handicapped, that is, children tested and diagnosed as hearing handicapped to a degree requiring placement in a special program. The hearing handicapped have

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* A very small proportion of deprived/disadvantaged children occurred in the statistical analyses reported later.

> difficulties in acquiring and using normal spoken language but, in general, can acquire and use non-verbal symbolic systems and ways of thinking.

It is not known how many children with hearing handicap are also aphasic. Experience in the U.K. (Moor House School for language-disordered children) over the last ten years has stressed the need to diagnose and differentiate the aphasic from the hearing handicapped child, especially when there is both hearing loss and language handicap in the same child. Browning (1972) describes in detail, as a parent, the difficulties which existed, until recently (even with advanced services for diagnosis and special education in the U.K.), in diagnosing an aphasic child. Until recently, over the years, aphasic children have been treated as deaf and subjected to intensive oral language work which has not been successful and can cause confusion and a sense of failure in the child.

It is known that receptive aphasic children are likely to suffer from significant hearing loss (Griffith(1972), Mordock (1974)) in addition to their specific failure to understand spoken language. There may well be multiply-handicapped children who are appropriately diagnosed and classified as having severe hearing loss, but also have a degree of language functioning which is markedly below even what would normally be expected from individuals with their degree of hearing loss.

As a practical consideration, the study was already committed by its terms of reference to examining children placed in the classes for "aphasic" children who were also hearing handicapped and who attended the Belleville Regional School for the Deaf. It was determined, after discussion and definition of children who might enter the study, that a number of children attending the Drury School, Milton, had verbal scores and language functioning significantly below the norms for tests established on the hearing handicapped population in the school.

Also excluded specifically were the cerebral palsied group, whose inability to produce speech was held to be due to brain damage or other reason for neuro-muscular paralysis, or gross difficulties in articulation; or where the general functioning of the cerebral-palsied child (lowered level of cognitive competence or perceptual difficulties) might be held responsible for difficulties in comprehending or producing speech. Even here, however, after the first exclusion from the study, there was a return to studying sample groups in specific programs, for the reasons described below.

Some of the difficulties of boards of education who participated in the study were undoubtedly due to the fact that 1) they were unsure of the precise children or groups to be included in the study, and 2) they found it difficult, at first, to see that it was necessary to look closely at the border-zone and to include in the study individual children who might be mixed cases, hard to diagnose, and presenting language disorder in the context of another set of handicaps.

It seemed absolutely necessary to draw some samples from the excluded groups to get information on whether language/communication disorders in these groups did have parallels or continuities with the language disorders in the classical specific language disordered group.

2.6 The Emphasis on Programs, not Diagnosis

2.6.1 Even more important was the need to establish whether programs and materials and instructional approaches for the language disordered had common ground with those used for other handicapped groups or could be extended to those groups. The converse is even more pressing. It was found that techniques based on symbolic codes such as sign language and idiographic symbols (e.g. Bliss symbols) were being increasingly and apparently effectively used by groups such as the hearing handicapped (signs) and the cerebral palsied (Bliss). These systems are also being tried with the autistic and aphasic groups.

It was essential to study the development and application of programs in those groups in which they were first, or more clearly, worked out, in order to understand the problems and possibilities of the program when it was extended to other groups. This in itself would justify sampling programs for language-disordered hearing handicapped who are using various kinds of "total communication" through sign and spoken language and the experiments in using alternative visual symbol systems (such as the Bliss system, first developed among the cerebral palsied as an alternative when no spoken communication is feasible).

Having excluded these major groups, it appeared valuable to sample them in the study, and study them separately.

If those who were tested as mentally retarded were excluded completely from the study, this would in fact remove the majority of the non-verbal and low-communicating autistic group who are central to the study. As Wing (1976) implies in her discussion of the common factors and the differential diagnosis between some autistic groups and mentally retarded, it made sense to include a sample of apparently straight-forward severe mentally retarded to see if their language characteristics, needs, and programs had any relevance to the study of language disorder.* In studying these groups, the professionals in charge (i.e. speech pathologists) were asked to select those children from the severely retarded groups who appeared to have unusually low language functioning, even at their cognitive level, or where the language functioning might well be the characteristic which contributed to their being perceived and classified as mentally retarded.

Similarly, as noted above, it was necessary to include as an important component of the study children diagnosed as "aphasic" but suffering from degrees of hearing handicap and taught in a school for the deaf.

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* See also the comparison of language handicap in mentally-retarded and specific language disability groups by a chief speech pathologist (Daley (1976)).

As a comparison group to this, a group was included who were not diagnosed as aphasic but were classified as hearing handicapped, but were significantly below the norms for the hearing handicapped population on verbal tests.

Finally, programs for the cerebral palsied were studied. These were trials of the Bliss symbol system which originated in the Crippled Children's Centre, Toronto. This is a system of visual ideographs encoding a range of the most important common concepts and grammatical relationships, based as far as possible on memorable (iconic) forms so as to be readily remembered and related to one another. This use of a non-verbal system of concepts, which can be built up into patterns of utterances, can form the basis of an organized system of discourse (with its own syntax). Its promise in providing a symbolic system for children with severely limited speech, and with equally limited ability in motor response, suggested that it might be adopted for other children who could not speak and found difficulties in dealing with verbal concepts.

There is an additional point, however. When communication with cerebral palsied children is established through an alternative sign or symbol system, the underlying language difficulties begin to emerge. The failure in articulation often hides this, since, if the child cannot communicate at all, the hidden difficulties are simply swamped or are additive to the articulation problems. Since cerebral palsied children are known to have disorders of visual/spatial perception (as well as the obvious visual/motor difficulties in co-ordinating eye and hand, or controlling limb movements in drawing, writing, etc.) it is hardly surprising that they may, in relation to their often severe brain injury, have difficulties in processing and coding verbal symbols. It will be of interest, therefore, in the future to make detailed studies of the symbolic and inner-language functioning of cerebral palsied children as revealed directly by their use of alternative sign or symbol systems (e.g. Fenn (1975)).

2.7 The Need for Classification and Diagnosis in Linguistic Functioning

2.7.1 Even the specific language disorder groups cover a great variety of conditions. Griffiths (1972) comments on the great variety found even within the classical diagnosed "aphasic" group. Any grouping of the language disordered children is extremely heterogeneous in pattern of deviance, in apparent cause and effects of disorder in language or symbolic process. Crystal (1976) points out that it is a characteristic of the language-disordered population that even individual children who have the same intellectual and linguistic level vary considerably in the pattern of linguistic stages they cover and the specific patterns of language structure.

Children have usually been classified in age, psychological characteristics such as ability level, vocabulary, memory, perception, etc. They may be described in neurological terms as likely to have brain dysfunction in particular areas which could account for a specific disorder of language. They are classified by syndrome e.g. aphasic or autistic (and this distinction is a useful one, despite the common ground between the two in language dysfunction). They are classified as having a deficit or as language-delayed -- with the assumption that if they are language-delayed they will catch up with normal language levels, given time and appropriate programs, whereas those with persistent deficit may need more specialized, structured, or intensive programs. Or a child's pattern of response and the need to meet it with particular forms of teaching may be a quite individual decision within a teaching situation.

Most of the clinical classifications available do not provide completely consistent or logical frameworks for description and, more to the point, they may describe and classify but do not help in describing precisely where the child is failing to function and learn in such a way that an appropriate program can be drawn up.

Crystal (1976) discusses the grammatical bases of language disability. Ingram (1976) in a companion volume, discusses the phonological disabilities of children. Both suggest that there are few precise and detailed linguistic analyses of the performance of handicapped children which relate this performance to 1) developmental age/stage norms in language, 2) comparative distance from reasonable adult speech, and 3) the acquisition or failure to acquire specific important linguistic structures.

Precise linguistic description, based on real samples of representative speech situations, as well as tests, should enable clearer description of what is meant by language delay, what is meant by deviance of language pattern, and when this can be regarded as a deficit rather than a failure to acquire the structure normally. Much is known about syntax and grammar (Crystal) and about phonology (Ingram) but much less about prosody and intonation of speech and the meanings of words and their relationships.

3 Criteria for Selecting Children as Language-handicapped

3.1 Criteria for Selecting Children as Language-handicapped

3.1.1 The definition of groups to be included in the study and those to be excluded, or sampled later, has been discussed. Within this framework, what are the criteria for describing children as having a sufficient pathology of language disorder to be included?

As previously noted, the definition of who was, or was not, a child with sufficient language disability to be in need of special assessment, etc. rested initially with the boards of education and/or professional workers in a facility for such children. Guidance on the general characteristics of the children to be selected and the severity of language loss or delay, was given in the first contacts with co-operating agencies. This was followed up by detailed discussion with them. In addition, a short inventory was devised to guide teachers, and others, on the kinds of language behaviors which would suggest that there was a language disability sufficient for inclusion in the study. (These materials are included in the Appendix, Inventory A.)

Without making such an inventory long, detailed and exhaustive and/or testing children directly, it would have been impractical to make more detailed criteria available. In dealing with different professionals with varying kinds of skill and interest, one could not assume that a long, detailed and exhaustive screening questionnaire would be feasible to use.

Despite the existence of a range of descriptions of clinical states, e.g. dysphasia, autism, there is little in the way of specific criteria for level and kind of language/communication performance. A considerable variety of tests was reported as being used; however, in practice, the range of test or observation measures used by the educational system to screen or assess an individual child is limited and different children do not all receive the same assessment. Children are likely to have been assessed on tests such as the Wechsler Intelligence Scale for Children, and vocabulary tests, but if this was a mass screening/review situation, they would not always have had detailed, clinical, or educational measures relating to language as such.* It is unlikely, for example, that there would in all cases have been systematic assessment of articulation, phonology and syntax, by use of language sampling to arrive at levels of linguistic functioning (as recommended by Lee (1974); Crystal (1976)).

The criteria had to be robust.

1) Where children have been screened on an intelligence test, [illegible] measures giving verbal and non-verbal components, it was proposed that children should be selected in the first instance for further review by the research team if they had a discrepancy of at least 30 standard score points

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* See statistical analyses of children's characteristics later.

(I.Q. points) between a higher performance and a lower verbal score at ages up to 7 years. This would give a discrepancy of 1½ to 2¼ years between non-verbal and verbal functioning.

2) Preferably, there should be a gap of at least 2½/3 years between general (non-verbal) cognitive functioning and language level up to age 7 (as tested or in terms of observed developmental stage).

The above criterion would select, for example, children with linguistic functioning at the 4 to 5 year level, at most, when the actual age is 7. The 4½ year level is conventionally taken to be the age at which children have acquired basic syntactic patterns. If children were selected when older, the gap obviously should be set larger, since the discrepancy of 3 years at a 10 year old level of general functioning and at 7 or 8 year level of language does not indicate the same problem of severity.

Selecting children on test outcomes of this kind is an apparently clear-cut and measurable but also restricting approach. On the one hand, requiring a differential score of 30 or more standard points on the W.I.S.C. tended to select children who would not be too low scoring in general, i.e. not severely mentally retarded since, if the lowest score was 50 to 40 I.Q. (standard score) the higher score would be at 80 or near it and the average in the lower educable retarded range, at lowest.

On the other hand, such a test is not a very sensitive instrument. The lowest language and cognitive levels which can, in any way, be reflected in test scores (and even then, in a high proportion of zero scores) are in the area of norms appropriate to 4½ years of age. So the "basement" effect of the test is prominent. But children with severe language difficulties are likely to be below the 4 year level in the area of language acquisition and functional language use. Moreover, the form of the test assumes capacity to understand verbal instructions even for non-verbal tasks.

Even when obtained, the verbal scores on Wechsler (or Binet) test are restricted in value since they essentially refer to capacity to understand sentences (Information, Comprehension) and to produce understandable utterances as answers, or to understand and produce straight vocabulary; i.e. an age 4 level, at least, in language function. So the verbal scores are complex in nature and based on vocabulary rather than broader aspects of linguistic functioning.

3) The use of general test data, such as the W.I.S.C. or Stanford-Binet vocabulary tests, was perceived as setting an "upper bound" to children's language. It was anticipated that there would be a high proportion of children, or a majority, well below test norms. Respondents were asked to select children with known language difficulties (apart from articulation) who showed a discrepancy of at least two to three years between general development and language level.

To give a standard for the lower end of functioning, participants in the study were asked to look for children who did not speak or apparently respond to spoken directions or statements, or had at most 3 or 4 morphemes (words) in their utterances. They were given an inventory guideline to follow and the emphasis was on looking for and selecting deviation in language behavior of a kind significant to the educator; that is, showing linguistic deviation such as telegraphic speech, two/three word sentences, failure to master transformations such as person forms, tenses, plurals, use of prepositions; i.e. ranging from the 18 month to 3 year level of language development.

3.2 Developmental Level in Language as a Guide

3.2.1 It is commonly accepted, from studies of acquisition of child language, that normal children have acquired the foundations of their syntax by age 4½ and can then understand and produce the main English sentence patterns. They can form plurals and tense forms (regular and non-regular), respond to active/passive transformations correctly; they have developed mastery of phrase and clause construction and their inter-relations, and of the common connectives and subordinates such as but, if, although, etc. A child at this level has by no means fully mastered his language; but he shows that he has acquired mastery of grammar in Chomsky's sense, and is unlikely to show gross linguistic failures or deviations.

But, as Crystal (1976) and Berry (1976) comment, the original studies establishing developmental stages in language acquisition in the past 15 years were based on highly selected and very small samples of children who are likely, from the description and facts of selection, to be upper middle class in origin, brighter than average. There can be variation of 6 months in either direction in the norms for language stages. Comparing "norms" from the literature with observations of many normal children and mental retardates of varying mental ages, Berry concludes that the "absolute" norm, as it were, for completing language acquisition should be pegged nearer 6 than 4 years of age.

There are other reasons for taking age 6 as the cut-off point that typically identifies reasonably complete language acquisition in the normal child. Phonologically (in terms of articulation, pronunciation, "intelligibility") a significant number of children continue to show delays and deviance in speech well up to age 7 or 8 (Ingram (1976), Kellmer-Pringle (1965)). For example, fricative and affricate phonemes, e.g. "th", "ch", may not be mastered until this late. To set a reasonable limit on "normal" delay due to developmental or other differences in children's language acquisition, it seems useful to set a general limit at about 6 years of age, assuming that in the majority of cases the major systems of phonological and syntactic aspects of language have been mastered by then.

1) No child with a "linguistic age" of 6 or over should enter the study or be regarded as language disordered in the narrow sense, if this "age" means that he has acquired the normal mastery of syntax and other language skills for age 6.

However, in the mixed bag of handicaps identified currently as having language delay or disorder, there may well be children functioning above this level but still perceived as markedly discrepant in spoken language functioning as compared with expectations for their age. Little is known about the stages of acquisition of linguistic structures above age 4½ to 6 years (Crystal's "Stage VII" (1976)) and test norms cut out at around this point (see Chapter 4). Obviously the child's language continues to develop. It can also be demonstrated that children continue to develop in mastery of the more complex forms of clause and relative clauses, especially those requiring precise reference of personal pronoun or anaphoras (Chomsky (1969)). To the extent that the child shows marked deviation from the norm in mastery of such later linguistic situations (i.e. at ages 6 to 12 years) he could be said still to have a language delay or deviance (though probably not disorder in the proper sense).

2) It is also true that little is known about the semantic development of children (as contrasted with what would appear to be closely related, vocabulary development). Whereas there are now clear norms, at least in terms of stages, for syntax development in the first 4 to 6 years, there are still few clear guidelines in the research to semantic development (see Crystal (1976), Bateman (1976)).

When a child cannot remember or produce words or phrases, or cannot produce names or labels, or appears to show marked difficulty in relating one form of meaning to an equivalent one (as in comprehending or paraphrasing a spoken or written statement or command) or finds difficulty in answering or in producing questions even though he has the grammatical apparatus to do so, then one must make clinical or educational judgements without clear norms. For this reason, the study not only used a short inventory of language, receptive and expressive, but included an inventory of basic language performances (Schedule 3/1) to be checked off if needs be by obtaining direction information from teacher or therapist about each child as appropriate.

3) The "fail-safe" procedure was this: When cases were presented for study, it was emphasized that, in case of reasonable doubt, any doubtful ("grey" area) case should be included. Further review with principals in charge of the facility or school, with teacher or therapist, review of records and direct observation of children provided for further checking on actual language level and performance. The research team, reviewing all cases in the study, acted as a calibrating level.

4 Communication Disorder, not just Language Disorder

4.1 Communication Disorder, not just Language Disorder

4.1.1 This is a study of communication disorder, not simply language disorder. In practice, the distinction is a fine one, since the major problem is whether children can use effectively, or normally acquire, or comprehend, spoken language.

Nevertheless, language is accompanied or augmented by non-verbal forms of communication which range from:

1) "bound" gestures such as pushing or pulling a person toward a desired object;

2) "natural" but free gestures such as pointing, facial gesture of mood;

3) the more socially determined gestures of nodding, etc. for yes or no, through to more systematic non-verbal gestures which are agreed on in that culture as having particular meaning (such as Shakespeare's "cocking a snook");

4) finally, there may be use of a systematic system of signs to stand for objects, events, persons and the relationships between these. Such systems may have the status of a language, i.e. meanings, conceptual relationships between symbols, possible grammatical relationships e.g. plural, past, etc. Argyle (1972) describes these various aspects of non-verbal communication in detail.

Any or all of these may be an important part of normal communication. They may become an even more important part of communication when spoken language is disordered or unavailable. (Schiefelbusch and Lloyd (1974), Lloyd (1976), Santa Barbara Autism Project (1976))

If children do not have a spoken language or gesture or sign, they may use spontaneously, or be taught, alternative visual methods such as Braille, drawing, rebuses, picture symbols or ideographs.

One reason for looking at communication in this broader sense is that the study addressed itself to programs. Programs may well incorporate a variety of other means than straight use or stimulation of uttered language -- such as pictures and sign language to substitute for, support or augment expression or comprehension.

The complete use of an alternative method of communication, either as a total replacement for spoken language or as a stage of learning language, may be the most important aspect of a program.

Different groups with language handicap are being taught to communicate in a variety of media. Groups of cerebral palsied and severely mentally retarded without language, in Ontario, are being taught to acquire and use the logical/conceptual symbols of the Bliss symbol system, a visual ideographic system. In England, groups of cerebral palsied/severely mentally retarded are being trained to use systematic sign language (Fenn (1975)). In Ontario, systematic sign language is used as part of a process of "total communication" with the hearing handicapped (i.e. as an introductory phase to language and as continuing support) and also with autistic groups. In England, systematic sign language is used as the introductory stage of communication and the basis of language for aphasic groups.

There are important theoretical and practical considerations. Use of non-verbal symbols, imitative, and symbolic play, the use of objects to represent other objects, precede the emergence of spoken language and are likely to be the basis of verbal language. (Sheridan and Reynell (1972)) In Piaget's theory, the sensori-motor operations, and the symbolic representations based on them, precede the development of spoken language and are essentially the basis of language. The non-verbal symbolic processes may be the model for the language system (Sinclair de Zwart (1969), Ricks (1972)).

Practically, the classical childhood autistic group displays marked difficulties in understanding and using imitative gesture or in symbolic play, i.e. the processes underlying use of gesture and sign, or other forms of visual symbol, to communicate. Some autistic children may acquire only a few signs but this may be better communication than they possessed before.

It can be shown, under Piaget's theory, that children "think" in signs and may continue to use contracted or vestigial signing to accompany their activities even when they begin to verbalize. This was observed to occur in aphasic children who had used sign language and were making the transition to spoken language.

The assumption that non-verbal symbolic processes in play, use of toys, etc. precede language is basic to some remediation programs such as that of Reynell or a similar one used in the Chedoke Hospital pre-school language unit. Play, and non-verbal symbolic representation, must be the foundation of spoken language and provide not only a transition to it but the means for language to emerge. (See play as a stage in structured language programs, such as Bricker & Bricker, Miller & Yoder) See Savage (1972) for an account of how non-verbal analogies and relationships are used to teach the child the relationships which are to be verbalized, such as "on" and "over", "standing" and "sitting", etc.

How far can or should a non-verbal system be systematic, like a verbal language? Clearly there appears to be an advantage if, as with the British Paget-Gorman sign system, the whole system is organized semantically around basic concepts and categories, around which basic signs and variants are constructed, and is also syntactically correct in having English symbol order and signs for syntactical operations, e.g. plural, tense, person, etc. (See discussion of the advantages and disadvantages of different sign systems in Lloyd (1976)).

But it is not clear whether the child's own non-verbal syntax is necessarily identical with English mature syntax or even follows closely the known stages of syntactical patterning in normal language acquisition. (See Fenn (1974) for observations on the non-English patterns generated by mentally retarded and cerebral palsied children in coping with systematic sign language.)

A crux in the teaching of the Bliss symbol system, at any level beyond simple labelling, is whether there is or should be a linguistic (i.e. English) syntax as compared with a conceptual ordering of the symbols. This would require establishment between user and receiver of the "rules" whereby symbols are selected and ordered. (See discussions in the newsletter of the Blissymbolics Foundation.)

This leads to another question: whether the non-verbal system is to be used as an alternative or substitute system (as is likely with cerebral palsied children unable to speak) and how far this can be developed toward fluent communication and to conventional reading and writing as long-term alternatives. How well can any non-verbal system co-exist with or stimulate vocalizing?

Observation in hearing handicapped groups in England using systematic sign language (Paget-Gorman (1968)) suggest that vocalization, at least in the young who have been made aware of speech, takes place naturally and spontaneously. "Total communication" has been observed to work effectively with autistic groups in Ontario. But with the childhood autism group, as Hung and the Santa Barbara Autism Project (1976) emphasize, there may be difficulty in attending to multiple stimuli ("Stimulus over-selectivity"), and the multi-sensory approach may impose overload conditions on the learner.

Communication (Wing and Ricks (1976)) is a more general term than language or speech. It refers to the transmission of information by any means. MacKay (1972) argues that the term should be restricted, limiting its use to interactions in which the signals from one organism are goal-directed towards another. He suggests that goal-directed activity is distinguished by the fact that the organism emitting the signal evaluates the response produced in the target, then modifies its behavior in consequence. It is this which allows one to distinguish random or stereotyped actions or responses from attempts to respond to or affect other people. This highly theoretical issue becomes a practical one when the teacher is seen attempting to evaluate the child's responses, on a Bliss symbol board, or interpreting the intent of perhaps badly formed signs.

Study of communication and communication disorder is central to this study in order to respond to the range of programs devised for the children involved.

Questions of theory and fact which arise are:

1) What kind of alternative systems can be used, and why?

2) How do the systems compare with one another?

3) At what stages of acquisition or maintenance are alternative systems useful?

4) How well can children learn such systems, how difficult is it for adults to master such systems?

5) With what "language community" will the child use his new or alternative means of communication?

5 Language Pathology

5.1 Clinical vs. Developmental Concepts of Deviation

5.1.1 In the mass of literature on clinical/neurological aspects of language pathology (see Travis (1957), American Journal of Speech and Hearing Disorders; the British Journal of Communication Disorder) there are few controlled studies of the relationship between language development and deviation in language.

Most recent studies of deviation in child language have been based on syntactical models of transformational grammar. It has been found useful to compare deviate functioning with the normal stages and levels of development in syntax summarized from a decade of research on young children (Brown (1973); Crystal (1976)).

5.2 Two Groups of Studies Contrasted

5.2.1 These studies of deviation fall into two groups:

1) a majority indicating that deviation in language is essentially delay (which may be represented by a discrepancy of 3 years or more between age and expected level of language development): The patterns of language found in deviant groups -- that is, use of base sentences and transformations -- are essentially the same as those in normal children.

2) a minority of studies which detect important deviations of structure, and specific disorders of language, in deviant groups. These deviations affect the variety and flexibility of transformations in creating sentence patterns.

It is useful to compare these contrasted studies with the patterns of deviation and delay described by Crystal (1976) and Ingram (1976) as summarized in Chapter 4.

5.3 Studies Suggesting "Delay" as the Foundation of Deviation

5.3.1 Lackner (1968) used 1,000 utterances from five mentally retarded children to construct imitation and comprehension tests. These tests were then used to modify the original "grammars" written to explain the underlying competence of the retarded group, so that comprehension and production could be assessed. Lackner demonstrated that when the response of these older retarded children was compared with that of younger normal children of the same linguistic level (the normal control in research studies of this kind) the linguistic system of the retarded followed developmental trends similar to those of normal children.

There was, however, increasing delay in the retarded group between the major stages of acquiring language. The grammar of the less advanced retarded was very "general", lacking in detailed development of transformations to vary sentence structure, and showed poor sensitivity to context. Only in the grammar of children with higher mental ages was the specificity and range of structure approximately that of adult speech.

Lenneberg, Nichols and Rosenberger (1964) studied mongol children's language development and concluded that their language system followed (though delayed) trends similar to that of normal young children. Ingram (1976) suggests the same is generally true for phonology in Downs' syndrome children.

Morehead and Ingram (1973) matched fifteen language-deviant and fifteen normal children on linguistic criteria, not on age or I.Q., as in previous studies. The normal group ranged from 20 to 33 months in age; the deviant from 62 to 105 months. Both groups ranged from level I to V of Brown's stages of language acquisition. Stage V is when syntax has been fully acquired, at about 4 year level. The deviant group was not seriously deviant in the organization of base sentence, phrase structures, or types of transformation (i.e. tenses, person, number, use of question forms, auxiliaries, etc.). Nor did they perform worse on minor lexical items or inflections.

However, they were more restricted in grammatical pattern, less capable of specific and varied placement of words in new patterns. This is similar to Lackner's findings. In summary, the developmental stages of language-deviant children are the same as normal, but they do not use their systems with the same degree of efficiency in developing more complex language structures.

Menyuk (1964-1969), on the other hand, found a deficiency of elaboration of transformations in a group of children with "infantile language". She concluded that the description "infantile" -- which suggests simple delay and similarity to younger children -- was not accurate, that there was a language deviation of a quite severe kind consisting of inability to elaborate transformations beyond an early level.

5.4 Dysfunction and Variability in a Severely Deviant Group

5.4.1 Johnson and Schery (1976) studied 100 utterances of language-disordered children gathered by highly qualified teachers. These children were in Los Angeles County special programs for language-disordered children, comprising a heterogeneous group of children who shared only the fact that they were all within two standard deviations of the average in mental ability and at least two standards below the mean on two tests of specific language function. "A wide variety of atypical learning, behavioral, neurological, and emotional problems was represented among these children."

The order of the acquisition of morphemes in the deviant group was compared with the norms for normal young children reported by Brown (1973) and de Villiers (1973). The conclusion was that these children acquired the fourteen morphemes studied,(including the eight most stable which were studied in more detail) in the same order as normal children but were one or two language levels (Brown's classification) behind. It was concluded that "the course of acquisition of grammatical structures might be abnormally protracted in this atypical population".

Although the results indicate "delay" within a "normal" pattern, the authors point out that greater diversity would be expected among the acquisition curves for various grammatical structures in the deviant group, since this group had cognitive abilities and experiences which were significantly in advance of the normal group when both were matched on language performance. In other words, a 7 to 9 year old deviant group is being compared with a 3 to 4 year old normal pattern. There was considerable discrepancy between the general cognitive functioning and the language functioning of the deviant group, even if the language system appeared to be merely delayed. This continuing discrepancy, as Reynell (1974) suggests, is the criterion for language deficit.

5.5 Deviation as Difficulty or Delay in Moving Between Stages

5.5.1 In the classical studies of acquisition of syntax, the emphasis is on levels of function and on the consistency of the language rules developed by the child at given stages. The Johnson and Schery (1976) study stressed the need to study the transitional phases between stages and the manner in which rules become generalized and consistent. "It may be the transitional phase (between stages) which is the most critical for language-deficient children." Wide individual fluctuation was observed in the use of morphemes in obligatory contexts; part of this fluctuation was due to the considerable day to day variability in a population noted for its inconsistency of response.

In summary, language-deficient children seem to learn the same forms in the same order as normal children but differ in the rate at which they move from first use of a language rule to its consistent application, and may be more inconsistent in establishing usage.

5.6 Studies Emphasizing Language Deviation

5.6.1 By contrast, other studies emphasize the pathology of the language-deviant groups studies. Menyuk (1969), as noted above, found that her "infantile" group did not elaborate transformations beyond a basic level of communication and were not simply "delayed" children. Menyuk and Looney (1972) used elicited imitation of sentences to explore the effect of varied sentence length and complexity in normal and deviant groups.

The deviant children had demonstrably deviant language, but medical and psychological examinations revealed no evidence of why this occurred, or evidence of perceptual, auditory or other organic damage. Hearing for pure tones was normal; speech and motor development of speech organs were normal. Intelligence was average or over. The deviant group was variously labelled as having "delayed speech", "infantile speech", and "language disability" -- once again a typical mixed bag in spite of being selected for intensive language remediation. Thirteen language disabled-children and thirteen normals were compared. There was only minor retardation among the deviant group on picture vocabulary and I.T.P.A. scores (.3 to .4 of a year) but marked retardation on an articulation test. The normals, of average age 4.6, were 1.3 years advanced in picture vocabulary score.

The strategy adopted was that of Lenneberg (1964) and Lackner (1968), a "regression" technique based on the fact that children, asked to imitate a language form which is not yet part of their productive language system, will use a lower level of response appropriate to their own grammatical system. Menyuk gave two groups of sentences: (a) containing active-declarative, imperative, negative, question, truncated passive, 3 to 5 words long and (b) containing all consonants in initial, medial and final positions.

None of the deviant group repeated either A or B sentences entirely correctly, contrasting with 46% complete success on A sentences and 23% complete success on B by normals.

Patterns of error differed: the deviants had more errors on negative, question, and negative-subject passive. They also had more errors on 4 and 5 word sentences than on 3 word sentences though there was no significant difference in performance on 4-5 or 5-6 word sentences. The deviant group simply repeated the unknown vocabulary items by rote, but had the greatest difficulty in reproducing the grammatical structures of sentences. The normals, by contrast, attempted to interpret the unusual vocabulary items and made errors. Typical of deviant errors were:

> "I can't say -- "I no can say"
> "What is that?" -- "what that?"
> "Nobody is going down" -- "Nobody going down".

In this study, length of sentence as such did not affect performance in the deviant group, nor did stress placed on words in the sentence by the speaker overcome grammatical omissions, e.g. "Does the boy like milk?" was reproduced as "The boy like milk?". And "That boy is named Tom", reproduced as "That boy Tom".

This finding contrasts with a previous finding of Menyuk's and other evidence that language-disordered children may have poor auditory memory. (See later discussion.)

Many deviant children in this study were functioning only at Brown's developmental level 1. Other children were at levels II and III but could not reproduce questions involving the arrangement of subject-auxiliary and verb. In normal children of 2 to 3 years, this transformation is a late acquisition.

In summary, language-deviant children analyze sentences in simple level 1 patterns. It appears that deviant children use simple rules for organizing grammatical structures and so continue to affect production. Menyuk concludes that "the differences must lie in their central nervous functioning and .... this functioning is specifically related to language".

Ajuriaguerra et al (1976) studied forty dysphasic children, 17 in detail over a two-year period. The group had no hearing loss but had a deficit in auditory perception. A 5 year old dysphasic was no better in performance than an 18 months normal. Verbal comprehension was almost normal but all had articulation problems. They were aged from 4.3 to 10.10 at the outset, and 7.2 to 12.9 on final testing. Over two years, the most obvious development was in vocabulary, motor-speech co-ordination, and in auditory-verbal perception, though one-third made no progress.

Training on syntax and spatial concepts did not appear to have much effect. The I.Q. had no clear relationship to language ability but children of normal/superior ability progressed most.

Deficient scores on the Wechsler test were on Information, Vocabulary and Arithmetic which require verbal processing and production of words and sentences, as compared with Similarities and Comprehension which rely less on formal linguistic structures, according to these authors. Academic failure, and failure to acquire forms of symbolic thinking and reasoning appropriate to adolescence was typical. The language impairment of this group was basically semantic, i.e. in understanding, not articulation. (Compare Chapter 1 and 2)

Development of language was, in general, proportional to the original language level. Despite progress, the entire group retained the characteristics of aphasia. It was concluded that "Dysphasia is not merely reducible to an obstruction in the development of language but rather seems to be a special kind of disorganization of language". Auditory perception was an important factor in development of language beyond a minimum level; the children who were youngest when first diagnosed made the most progress. These are also two basic points made by Eisenson (1972).

5.7 Auditory Memory and Language Deviation

5.7.1 Menyuk (1964, 1969) found that normal children were affected by the syntax of a sentence and its relation to their own level of grammatical development, rather than length of sentence (up to nine words). Correlation between sentence length and inability to repeat correctly was .04. By contrast, in the imitations of the deviant group, there was a correlation of .53 between sentence length and ability to repeat.

The deviant group was affected by the last item heard and tended to make omissions whereas the normal group modified transformations to change the sentence to their own grammatical system. Rosenthal (1972) suggested that limited short term storage underlies difficulty in perceiving and classifying speech signals, and Griffiths (1972) makes the same point in identifying the characteristics of "developmental aphasia".

5.8 Sequencing and Temporal Order

5.8.1 Efron (1963) found adult aphasics impaired in ability to judge which of two sounds occurred first unless they were separated by a gap of 575 millisec. Lowe and Campbell (1965) confirmed that aphasic children needed a 350 millisec. gap to process the difference between speech sounds, contrasted with 30 millisec. for normal. Sheehan, Aseltine, and Edwards (1973) found that comprehension in adult aphasics was helped by silent intervals between phonemes, not between words. Tallal and Piercy (1973, 1974) found no impairment of aphasics on visual tasks but inability to sequence auditory items when the rate of presentation was too rapid. They believe that this is not due to a sequencing disability but to difficulty in discriminating between stop consonants (which have rapidly changing spectrums in second and third formants). There was less difficulty on vowels (which have steady state frequencies over the first three formants of speech for 250 millisec.).

Doehring (1960) and Withrow (1964) found both visual and auditory discrimination impairment in aphasic patients but it is not clear how much this may have been due to general impairment of function. Poppen et al (1969) propose there is a general sequencing disability which is not limited to the auditory mode.

These pieces of evidence suggest that, underlying language deviation, and delay in language development, there are difficulties of auditory processing of speech and/or difficulties in coping with temporal order of speech sounds. Eisenson (1972) summarizes the available information to show that aphasic children require more time or repetitions to acquire discriminations in sound which are readily mastered by normal children. Since language depends on discriminating, selecting, or producing specific discrete units of sound, and on the specific order in which they are organized to produce correct syntax, deficiencies in either auditory processing or sequencing would significantly affect language development.

5.9 Delay and Deficit

5.9.1 There is a contrast between those studies (the majority) which emphasize the language development of the deviant group as essentially normal but delayed, and those studies which point to marked deviations in language structures or performance. Compton (1976), dealing with phonology, points out that delay is not a simple concept. If a child remains at a given stage well beyond the time when normal development and cognitive growth indicate he should have moved on, this affects not only his present functioning but his acquisition of new experience. As Menyuk suggests, new experience of response is fed through the old developmentally retarded system and, if it begins to deviate at an earlier stage and is not corrected, it may deviate more and more. Delay, therefore, can affect acquisition at all succeeding stages. The reader is referred to the distinctions made between delay and deviation by Crystal and by Ingram, in Chapter 7. Interpretation of language deviation must also be related to the criteria set for level of performance.

Basic syntactic competence is achieved by the normal child at about age 4½, according to the classical researches of the past decade (6 years as proposed here). Even a language-deviant child may "catch up" with the 4½ year level in due course; in the research studies reported here, deviant children have reached this kind of level but at ages well beyond 4½ years, even up to 9 years.

If, as suggested in the discussion of normal language development (Chapter 4) there is a longer and more elaborate development of language from age 5 to adolescence, the delay of the language-deviant child will be even more marked on this extended time-table, though he is progressing through similar stages. In fact, as Crystal (1976) points out, there is no direct detailed evidence beyond age 5 that children progress through similar stages in the further acquisition of syntax or semantics.

It is also evident, from most of the studies reported here, that language-deviant groups were, despite selection, quite heterogeneous and that the labels of "delay", "deviation", "infantile speech" may be applied to children in the same group.

5.10 Difficulties Caused by the Instruments Used or Language Models Adopted

5.10.1 Some of the difficulties in arriving at clear conclusions may also be due to weaknesses in the instruments used or in the theories adopted to guide language research.

Johnson and Schery (1976) hint that the instruments or categories of research (i.e. the language or grammatical categories used) or the lack of sensitivity in these measures may confuse research. "The clinician and researcher is actually caught between the need to use analytical categories that occur at reasonably high frequencies, and the fact that these categories may obscure the very development he desires to chart." They stress the need for qualitative studies of language, often neglected recently, as well as quantitative analyses of scores and levels.

It is not possible to measure the full complexity of language functioning or development with the instruments developed from syntactic theory up to 1970. One reason is the growing inadequacy of the transformational grammar model. Transformational grammar, depending on categories, such as phrase structure and transformations, i.e. the sentence, sets a sharp limit to what can be studied. It is insensitive to linguistic forms such as morpheme, word, phrase and clause. Crystal et al (1976) make a strong case for the conclusion that transformational grammar -- though a powerful system and valuable in charting development -- has not proved to be an effective assessment or diagnostic tool, and does not provide a comprehensive and sensitive guide to language remediation.

This does not invalidate the importance of syntactic structures and their development as fundamental in language, but leaves open the issue of what theoretical models or grammars are in practice most useful. Alternative approaches, based on a more empirical and "structural" model, such as Quirk et al "A Contemporary Grammar of English" (1972) reveal new possibilities for assessment and remediation.

The patterns of specific language disabilities found by Crystal as a result of applying the language assessment instrument based broadly on his alternative model of syntax do, for the first time, reflect the varieties of handicap familiar to the clinician. Effective and imaginative new programs for the mentally and linguistically retarded, which have appeared in the last 5 years (Fristoe (1975)), appear to reconcile several principles in language -- the developmental and the behaviorist, the syntactic and semantic. (Schiefelbusch and Lloyd (1974)). New empirical approaches seem to be needed in both remediation and research. The qualitative analysis of language, as well as the quantitative, needs attention.

6 Normal Child Language Acquisition and Development

6.1 The Importance of Normal Language Development

6.1.1 Research on the development of language in children, over the last ten years, is too extensive to review in detail here. The reader is referred to summaries in Bloom (1970), Cazden (1972), Brown (1973) and Dale (1976).

It is crucial for those working with language-disabled children to understand how children normally acquire language. This gives a developmental criterion for assessing language performance and describing stages and sequence of linguistic structures.

"A description of what normal children do while learning their native language will constitute an adequate statement of the language teaching program". (Dever (1973)) "To use a normal developmental hypothesis as a basis for ordering structure has much to commend it, particularly as its empirical support is based on the fewest possible assumptions about the complexity of language processing." (Crystal et al(1976))

Crystal makes the developmental sequence of linguistic structures the basis of his assessment instrument and of specific recommendation for language therapy. Similar conclusions are drawn by Morehead and Ingram (1973) and Johnson and Schery (1976). Knowledge of language development is important for the teacher and the psychologist. Study of child language and psycho-linguistics is an increasingly important aspect of the professional training of the modern speech pathologist. The Quirk Report in the United Kingdom (1972) recommended increased study of this aspect of linguistics by speech therapists.

A considerable body of knowledge has been gathered about the normal stages of development of grammatical structures (syntax) and phonology, but only quite recently have normal and deficient language been systematically compared, e.g. in:

"Normal and Deficient Language" - Morehead and Morehead (1976)
"Language and Communication in the Mentally Retarded" - Berry (1976)
"Language Assessment, Retardation and Intervention" - Schiefelbusch and Lloyd (1974).

6.2 The Linguistic Basis of Research

6.2.1 After 1963, linguistic theory -- particularly Chomsky's theories of generative grammar -- formed the model for most research on early childhood language. A number of important studies described the development of syntax in the child between 1½ and 4½ years. Chomsky's grammar has been reviewed frequently before. (See McNeill (1970) Cazden (1976)). Its principles are of theoretical and practical significance. Briefly, Chomsky's generative grammar:

1) is based on the prior importance of syntax, i.e. grammatical structures as the basis of language.

2) It is a "phrase structure" grammar. This reflects the actual flexibility and creativity of production of language. It enables the user of the language to build an infinite number of sentences and inter-relate these structures in many ways (i.e. iteration and embedding within one another) as contrasted with the linear finite grammar of the kind built up by stimulus-response units and chains when language is acquired solely on behaviorist learning principles.

3) It distinguishes between a "deep structure" level at which fundamental categories of language are selected and organized into sentences, and the "surface structure" which appears when the base utterances have been transformed grammatically, had meaning incorporated and been coded into sound.

4) It distinguishes between the theoretical "competence" of the language user, i.e. the perfect knowledge of the mental grammar as contrasted with actual "performance", which in real life may contain errors and "ungrammatical" responses.

In the theory, the base sentences, viewed as similar to active declarative sentences, are transformed by various rules from their primitive form into question form, passive form, have auxiliaries added to the verb, be negated, have tense, number, relationship of pronoun introduced.

Typical studies (Brown et al (1973)) have observed small numbers of children intensively over fairly long periods of time, recording in detail their language production. Only recently, in the Bristol (U.K.) study, have large numbers of children been studied. For each child, at various stages, a model grammar was written. It was inferred from these analyses how far a child had developed "base" structures, such as two or three word sentences, or more grammatically complete sentences, had acquired mastery of noun and verb phrase, could use subject-verb-object relationships, and had mastered transformations such as negation, question forms, tense, number, passive/action transformations.

At one time (Braine (1963)) it was believed that an early form of child grammar was the "pivot word" pattern in which a small number of "pivot" words were simply paired with a larger number of other words to make elementary statements, e.g. "Dinner all-gone". But the emphasis changed to seeking for rudimentary grammatical relationships (subject, verb, predicate) even in two-word sentences. It was observed that the child normally acquired mastery of basic grammar by age 4½ years.

Naturalistic observation and systematic recording of utterances was supplemented by simple experimental studies in which varied tasks were presented to children. An example of these was the response of children to tasks of comprehension, imitation, and production of appropriate sentence patterns. (Brown, Bellugi (1964)). This led to the conclusion, challenged to some degree by later work (Bloom (1974), Guess, Sailor & Baer (1974)), that comprehension is easier than imitation and this in turn easier than spontaneous production of a sentence.

This kind of finding has guided the assessment of children's mastery of language structures, and the programming of tasks in language therapy. Another study dealt with the child's ability, at a later stage of development, to comprehend passive forms of active sentences which had already been mastered. It was observed that young children tend to make the sentence active, i.e. take the first occurring noun phrase as being the subject even in a passive sentence. Inferences were drawn about the tendency of children to seek subject-verb-object as the expected pattern in English and even in other languages which had different word order for these grammatical categories in the mature language.

It was observed (Crystal (1976)) that when children start to elaborate the sentence, they do so first by enlarging the object, not the subject: e.g. "The man kicked the large ball", not "The large man kicked the ball". This is relevant to planning language program material so that it matches the child's development.

Menyuk (1969) and others showed that even when imitating sentences directly, the young child introduced various kinds of deletions, simplification, or transformations which were appropriate to his own stage of grammatical development. This is an important finding, since it shows that children do not make random errors but filter the language they perceive to produce it through their own system of grammatical rules. The same is true of their phonology. (Ingram (1976)).

6.3 Language as a Rule-based System Based on Discovery

6.3.1 These studies show that the young child acquires language extremely quickly and efficiently between 1½ and 4½ years of age. An important conclusion is that acquisition of language is unlikely to be due to simple reinforcement and practice or direct imitation of parents. The evidence suggests that children seem to learn by a process of search, match, and discovery -- finding rules of language which they apply and generalize and then use as the base for the next stage in organizing syntax. (Braine (1971))

Well-attested examples of the child developing his own rules are his over-generalizing of particular transformation such as tenses formed with "-ed", e.g. "buyed", "hitted", even though he has previously learned and highly reinforced the regular forms. The child resists an adult form if he cannot incorporate it into his own grammatical structures, as in McNeill's classic example of a double negative being corrected eight times by a mother. Finally, the child retained the double negative but incorrectly added the transformation he heard: e.g. "Nobody don't like me." (Child) "Nobody likes me." (eight corrections) "Nobody don't likes me." (Child's final version)

Chomsky emphasized that the language heard by the child is incomplete, fragmentary, and "corrupt" in various ways, yet the child succeeds within four years in developing a practically perfect model of the grammar of his language. Chomsky claims that knowledge and use of language form a separate system from the conceptual system and cannot be explained in terms of general learning theories. In other words, there are internal processes and mechanisms in the human infant which predispose him to develop spoken language and provide structures for it -- "A Language Acquisition Device".

There is evidence for pre-disposing structures of this kind. Hubel and Wiesel (1963),investigating visual-perceptual mechanisms, demonstrated that in the small mammalian brain there are neurological functions and areas of function which are "preset" to register and process particular stimuli such as lines or contours which are vertical, horizontal or oblique. On the other hand, Braine (1971) has shown that the early environment of the child is important; adults adapt to his level by using simplified and repetitive utterances on which he can use his inductive processes more readily.

These issues are not merely theoretical. They raise questions of what neurological forms of organization and what patterns of environmental stimulation are needed to acquire language, and how far deficit or delay in the development of these structures and processes can account for difficulties in acquiring language.

A child apparently has a language process which enables him to acquire complex syntactic structures. This allows him not only to generalize but to generate an infinite number of sentences with the same structure. Learning based on stimulus-response may be generalized, but it seems unlikely that this kind of learning will lead to a generative response.

This raises the question about a stimulus-response approach which sets out to teach specific language patterns to severely language-disabled children. Will the language behavior generalize? There are those who believe that a language-disordered child can build up generative responses in this way. "The child develops language rules from specific patterns." (Guess, Sailor & Baer (1976))

6.4 Difficulties in the Syntactic Model of Language Learning; the Development of Semantics

6.4.1 The emphasis on research described up to this point was on the child's acquisition of syntax, and the primacy of syntax as the foundation of language. Much of the research in child language and psycho-linguistics attempted to demonstrate the psychological reality of a theoretical system of generative grammar. This model stimulated many insights into children's language but has recently been found less rewarding. Experimental data on children's responses have not always matched closely the effects of transformations expected from grammatical theory, e.g. in experiments on comprehension of passive sentences.

Crystal et al (1976) further comment, "There is, then, a great deal of interest in the application of transformational grammar in the field (of language remediation) but the results have been disappointing .... the salient differentiating features are precisely those not readily describable in terms of the most important characteristics of the transformational grammar model", and

"We have never found an analysis in transformational terms to be useful for more than a small part of the overall picture."

But in pointing out the shortcomings of transformational grammar at the practical (remedial) level and as a research model, Crystal et al (1976) emphasize that "it is possible to carry out descriptions of the various features of syntactic development without having to commit oneself to any of these theories".

The classical position in generative grammar is that the syntactic classifications and operations are basic in forming language. Meanings (semantics) are integrated into the abstract grammatical patterns.

Semantic relations, i.e. the linguistic categories describing relationships of meaning within a sentence, are in part determined by the grammatical categories in which they occur. Important semantic processes, making a sentence complete and unambiguous in meaning, occur, in Chomsky's theory, also at the surface of language after the transformations of sentence form, tense, number, etc. have taken place and the abstract relationships are translated into phonological patterns. In other words, meaning follows grammar. "The emphasis is increasingly less syntactic and more semantic with few frameworks of any descriptive range and depth of detail emerging". (Crystal et al (1976)) Interest has turned since 1970 to the study of *semantics* in child language as contrasted with *grammatical* structures. Bloom in the 1970 study which signalled the change, stressed that it was difficult to interpret unambiguously in grammatical terms the two and three-word sentences of a child. To understand these, it was necessary to relate the utterances of the child to the whole context of behavior, i.e. meaning has to be taken into account if the grammatical relationships are to be identified.

Schlesinger (1971), Slobin (1972) and others have put forward *semantic* explanations for the child's acquisition of language.

There has been a move away from generative grammar as a model to other grammatical systems such as Fillmore's "case grammar" (1968) which analyzes relationships in terms of major semantic categories such as action-actor-object, location, possession, etc., rather than in terms of "subject-verb-object", "noun phrase", etc.

It is important to distinguish between the *cognitive* processes of the child (classifying, ordering, patterning experience, perceiving, acting, etc.) and the closely parallel *linguistic* processes (categorizing, labelling, sequencing) in semantic terms such as location, action, cause/effect, animate/inanimate, male/female, singular/plural.

The child may have acquired the cognitive processes, e.g. discriminating or classifying objects, but it does not follow that he can transform these abilities into linguistic form. Normally, conceptual development must precede semantic development but when language categories and processes have emerged, they may in turn influence further conceptual development.

More recent research on acquisition of language (i.e. Clarke,(1973,1974) Nelson (1974)) makes the case that semantic categories are the primary ones, and suggests that syntax is based on the child's perceptions of meanings, and follow from his ways of classifying and arranging his semantic meaning categories.

Early semantic categories reflect the world of the child -- the salient features of objects or the actions and effects of actions he perceives so that the verbal emerges from the non-verbal. (Bloom (1974))

Sinclair de Zwart (1971) demonstrated that a child does not normally use semantic distinctions unless these are reflected in his actual cognitive operations. Children who perceived a relative difference in length between objects were able to use the term "longer", but those who did not perceive this distinction referred to their dimensions concretely and separately: "This is long. This is short". Clark (1974) suggests that children evolve semantic categories by identifying one positive extreme of a dimension such as size (e.g. "big") then contrasting this with its opposite and finally developing a concept of graduation of size between the polar opposites. The child's attention is drawn to the salient features of his environment in creating semantic categories. (See Morehead and Morehead (1976), for summaries) These developments have practical implications for the planning of language remediation. (See the Nisonger program and the Los Angeles County Autism Manual (1977))

6.5 The Relationship of Language to Symbolic and Pre-verbal Systems

6.5.1 A child has means of operating on the objects of experience and of symbolizing before he acquires language. By the age of 12 months, a normal child responds to common objects by demonstrating their use outside the context in which he has seen them used, can imitate gestures he has seen previously. By the age of 18 months to 2 years, he can use one object to represent another or to symbolize relationship, e.g. the wooden block becomes a train; drinking from a small empty cup. (Piaget, Sheridan (1972))

Language clearly depends on this previous non-verbal symbolizing and is closely related to it. More recent research (Sinclair de Zwart (1969)) emphasizes that verbal language grows out of these previous levels of symbolism and is likely to be based on the most fundamental and general cognitive operations. In the last analysis, the abstract relationships of syntax may be derived from and paralleled by the more general operations and coordinations by which the child structures and organizes his world.

In other words, one important recent emphasis in research and in verbal and non-verbal language programs is on the conceptual or cognitive foundations of language in the child. Morehead and Morehead (1976) see the beginning of language at the point when the child can detach the object he uses from its immediate context and use it in various ways, i.e. change its classification and significance.

The language/communication difficulties of grossly-deviant groups such as the autistic, and to a lesser degree the aphasic, may originate in delay or deviance in symbolic behavior shown in play, imitative gesture, and use of objects to represent more general relationships. Early assessment and intervention, as Reynell points out, are crucial.

Reynell claims that at the age of 2, in the normal child, the non-verbal and verbal symbol come together. The pre-verbal processes of forming concepts and symbols converge with the language system.

Sheridan (1972) gives evidence for the convergence of language forms (labelling, names, etc.) with imagery and symbols at age 18 months. She suggests that true language emerges when the child can detach the sounds he makes (commenting, naming) from the actual situation. Ricks (1972) suggests that the child first uses an arbitrary labelling sound (first word) at around two years; this "word" has an arbitrary range of meaning and is not necessarily drawn from any previous words he has heard or babbled.

Such beliefs have a direct effect on programming. Blockley and Fraser (1973), for example, see language as based on perceptual and symbolic processes involving discrimination, comparison, and classification, and suggest that groups of young children with severe language delay need not further immersion in spoken language (which they cannot cope with and which may cause dislike and avoidance) but a non-verbal preparation for language patterns. Reynell closely integrates the non-verbal and verbal, but in a program for language-delayed children (seen also in the Chedoke Hospital, Hamilton, pre-school program for language-delayed children) makes use of varieties of play and symbolic experience as the introduction to and vehicle for language. (See also the program for transition from non-verbal to verbal language patterns of operation and response in teaching language-handicapped children described in Wing (1976) and Everard (1975))

Acknowledgement of the parallels between language and non-verbal forms of symbols and communication has helped in the realization that alternative forms of communication (signs and symbols, etc.) can be viewed as language systems in their own right. The non-verbal systems may also be transitional forms, enabling the learner to make the bridge from the conceptual or more concrete system to the spoken language.

6.6 Directions of Development; Implications for Programming

Crystal (1976) points out that there is a distinctive linguistic system, even if it is based on more fundamental cognitive structures, and it is important to deal not simply with cognitive problems, but with specific linguistic structures in assessing and planning remediation.

Modern intervention programs in language, discussed later, e.g. Bricker and Bricker (1974) and Miller & Yoder (1974), set out to move the retarded child, depending on his language repertoire, from the early concrete/conceptual stages of object manipulation and motor imitation to linguistic mastery of words and structures. Menyuk (1976) points out that language acquisition depends on developing the relationship between a structure of concepts, operations, etc. and a series of abstract relationships represented by sound patterns in verbal language, and that a minority of children with no other obvious handicaps fail to master these phonological abstractions. For all the research, the precise nature of failure to acquire language is still a major problem.

It seems likely that transformational grammar, as applied to early childhood language, has, at least temporarily, exhausted its usefulness. The search for alternative semantic and, below this level, conceptual explanations has been fruitful. There is a need for other models of grammatical systems and language. Transformational grammar (Crystal (1976)) does not provide the flexibility and variety of description of linguistic structures in the real language which is provided by more traditional structural grammars such as Quirk et al "Contemporary Grammar of English".

Transformational grammar reaches the ceiling of its usefulness at the 4½/6 year level and fails to give insights into further levels of development. In practice, its categories do not reflect the varieties and levels of language deviation which the speech pathologist and linguist know to exist. Some of the contradictions in the research of language pathology may be due to the fact that transformational grammar fails to provide a sufficiently adequate system for assessment and categorizing language deviance.

Analysis of the language of a group of adolescent verbal autistics by Bartolucci (1977) showed that they had acquired the normal syntactic patterns and could, in terms of generative grammar, converse. But this description failed to show up the semantic difficulties of this group, the lack of sensitivity and flexibility in use of language in real-life situations. It seems necessary to find other interpretations of language, such as Halliday's (1973) which bring in these varieties of language usage. One emphasis in language research is on the subtler aspects.

Programs for remediation are now likely to vary -- to incorporate syntactic structures and sequences, or emphasize the semantic categories of experience, or the need to begin with conceptual experience. Comprehensive programs for the language-retarded, such as those of Miller and Yoder, or Bricker and Bricker, are likely to make use of all aspects of language acquisition, and to move from direct experience with objects through stages which lead to the teaching of syntactic patterns based on words and actions already acquired by the child. (Reference is made to the following chapter on programs.)

The contribution of specific reinforcement and habit-learning has been down-played in the psycholinguistic account of language acquisition. Specific learning patterns are likely to contribute to some stages of language learning. Ability to discriminate between general characteristics of objects, of sounds, etc. is an important foundation in acquiring language. The ability not only to imitate specific response but to be ready to imitate and to generalize what has been learned forms the basis of what has been termed"generalized imitation". The establishment of these skills is crucial in acquiring language in language-handicapped children. (Kent (1974), Santa Barbara Project (1976))

Programs of language remediation usually have to take account of both developmental (psycholinguistic) theories and sequences, and task analysis and behavioral management techniques.

6.7 Common Stages in Acquisition of Language

6.7.1 As in many aspects of child development, language development appears to follow regular stages through which children normally move, though at different speeds.

Slobin (1973) outlined a number of basic procedures or concepts likely to be used by all children to construct the grammar of their language. He based his conclusions on cross-cultural and longitudinal studies of children from several different language groups. One of these basic principles of language development is essentially Piagetian: "New functioning makes use of old forms; old functions are experienced through new forms." Brown (1973) compared the strategies used by normal and retarded children in acquiring language structure. He found that strategies used were essentially the same as those used to expand those structures at a later age. Strategies used by children from different language groups, in learning language, were similar.

On the other hand, detailed studies of the acquisition of syntax by different children show individual patterns of learning. There can be differences between boys and girls in ways of acquiring syntax. There can be differences between similar children in the manner in which semantic categories are generalized -- contrasting a relatively steady acquisition on the one hand and periods of delay, periods of swift acquisition, on the other hand.

Recent research suggests that even in the earliest stages, there can be differences between children in producing socially-related expressive language, i.e. making demands, asking questions, or in descriptive statements. (Nelson (1973)) These language strategies may be related to the adult environment of the child.

There are stages of language acquisition and general levels of performance which can be used to guide assessment and intervention, but language programs must be matched to the needs and progress of the individual child.

6.8 Linguistic Development Beyond Age 4½ Years

6.8.1 Crystal (1976) expresses reservation about the validity of setting the minimum age for complete grammatical (syntactical) development as low as 4½ years. Berry (1976), in his discussion of the language development of mentally retarded children, expresses his belief that the earlier studies of language acquisition were based on children who were selected for superior intellectual and language ability. In his experience, the actual age at which most children have acquired syntax is likely to be nearer 6 years. However this may be, a child who has reached the equivalent of a normal 4½ to 6 year level in grammatical competence is not, strictly speaking, deviant in language. That is why this level of performance is proposed as an upper boundary in establishing criteria for classifying children as having language delay or disorder.

There is evidence for considerable development in phonology, and certainly in inflections, semantics and morphology in the years from 6 to 12. It can be argued that the subtler aspects of language delay or deviation are reflected in significant retardation in language performance even at these higher levels.

Palermo and Molfese (1972) provide a useful review of the evidence for linguistic development beyond age 6 years.

6.9 Phonological Development

6.9.1 Though phonology, syntax, and semantics are usually distinguished in analyzing the language system, they are obviously interdependent in the child's linguistic development. For example, intonation patterns which in the first year of life communicate emotional attitudes and feelings, later become vehicles of grammatical relationships and meanings in oral language. Crystal has analyzed the importance of intonation and prosody in language. Phonological contrasts are used by the child, even one with deviant articulation patterns, to distinguish meanings. (Ingram (1976))

Articulatory skills improve between ages 3 and 4 and between ages 5 and 7. By age 8 years, articulation and the development of the phonological system is essentially at the normal adult level, but a significant minority of ostensibly normal children are delayed in mastering the more difficult phonemes and consonant clusters which require intricate articulatory gestures or patterns. Kellmer Pringle (1965) reports a significant proportion of children as still having articulatory difficulties at age 7.

Ingram (1976) demonstrates that the development of the phonological system is a complex one, involving three levels; input or perception of language, processing of sound through existing rule systems, and output through the articulatory system. Deviation from normal can occur at any level. Chomsky (1975) points out that though the phonological level is placed by him at the level of "surface structure", this does not mean that this system is simple or superficial. He suggests that coding of linguistic structures and meanings into sound is the most complex and abstract level of all language processes. This is why the acquisition of spoken language is so difficult. It is probably for this reason that individual differences (and opportunities for deviation to occur) are found at the morpho-phonemic level described by Chomsky and Halle (1968), i.e. the ways in which the sound system of the English language relates to the morphology of words and to meanings.

6.10 Morphology and Inflections

6.10.1 In highly inflected languages, such as Russian, it appears that children are still mastering inflections by age 8 or later. This is not so obvious in English, which has a limited inflectional system for grammatical purposes. Nevertheless, children between ages 6 and 7 years are still mastering the s/ z/ and ez inflections of the plural noun, e.g. "horses", and the rules which govern their choice, and also the t/ d/ and ed/ variations of past tense.

Berko (1958) showed that 99% of 7 year olds may have mastered the "ez" ending for "glasses" but not necessarily generalized the rule. Palermo and Molfese (1972) suggest that children may learn unique forms by rote before they develop the rule for them. Anisfeld and Tucker (1967) found that at 6 years of age children use a "number plus singular noun" instead of the plural form when unsure of plurals. They have the concept that the plural requires an addition to the singular form in nonsense words used as test items. At this age, there was 50% error in correctly using the ez/ inflection for (nonsense word) plurals, though there was only 25% error for s/ and z/ endings.

Barlow and Trail (1968) studied 6, 7, 8 and 9 year old children on their choice of markers for the plural in nonsense words, i.e. the degree to which they had abstracted rules for these markers. It was found that the older individuals preferred markers with few feature differences. The rule developed was that the plural inflection had the same characteristics in voicing as the preceding sound. For example, "mat-mats", "mud-muds"; "t" is unvoiced and so is "s"; "d" is the voiced form and so is "z".

Anisfeld and Gordon (1971) showed that there were differences in choice of apparently arbitrary sounds in plurals. Grade 1 and Grade 4 children preferred sh/, ch/ and j/ which appeared to the authors of the research to be related in articulation to the actual sound z/ used in plurals. Adults accepted the ch/, j/, th/ or f/, v/ or k/ sounds which share a common phonological feature. Bryan and Anisfeld (1969) showed that children have difficulty in parsing singular forms, given plurals.

6.11 Part-whole Segmentation (Sound)

6.11.1 In their perception of sound, children appear to proceed from larger undifferentiated units to smaller constituents, i.e. from sentence pattern to word, to syllable, to phoneme. Savin and Bever (1971) demonstrated that adults analyze syllables prior to extracting phonemes and conclude that "phonemes are abstract entities that are perceived only by analysis of previously perceived syllables".

Even though a child has completed his phonological development by age 7 or 8, he still must learn to distinguish phonemes when he relates auditory and visual symbols in print. Zhaporova (1973) showed that children were 5 before they could segment words readily into initial sounds, e.g. they could not isolate nor recognize the initial sound of their own name, or a common word, without help.

At the level of reading, Bruce (1964) found that it was not till age 6½ that children could consistently blend sounds, and segment words in terms of sound by deleting a sound from a word to leave behind a recognizable word, i.e. shift from segmenting in terms of sound to recognition of a unit of meaning. There is a specific stage at which the child makes the transition to relating the abstract sound system to the system of concepts and meanings he already possesses. This is a stage which language-disordered children, or language-delayed, have difficulty in achieving. There is a parallel stage when children who have acquired spoken language have to translate sound into the abstract system of written language and an even higher proportion of children show similar difficulties in making this transition. In this sense, deviation in acquiring spoken language and in acquiring reading have close parallels. (Klasen (1972))

It is probable that the children who are vulnerable at the first stage (show language delay) are even more vulnerable at the second. Language deviance may relate directly to learning disabilities.

6.12 Advances in Syntax, Ages 5 to 12

6.12.1 Important advances take place in syntactic mastery after age 5. Earlier studies (Browne, Braine) suggested that children had, by age 4½, completed mastery of phrase structures, (i.e. base sentence patterns) and nearly all the necessary transformations (forming questions, active-passive, plural and tense changes). There is, however, not yet full development of the auxiliary "have" participle complement, pronoun usage, and control of conjunctions such as "if" and "so".

Loban (1963, 1966) showed that mastery of syntactic structure and variety of structures within sentences increased from 5 to 15 years of age, especially in use of phrases, adverbials, and nominalizing. O'Connell (1967) found that embedded complex sentences increased from 10 to 13 years of age.

Review of the incredible variety and complexity of English grammatical and semantic forms summarized in Quirk et al "Contemporary Grammar of English" indicates the range of linguistic forms to be mastered by the mature speaker of the language. There seems to be evidence for periods of rapid linguistic development between 5 and 6, between 10 and 13 years, as if there were periods of rapid acquisition, then longer periods of consolidating what has been acquired.

Chomsky (1969) pointed out that children even over age six were not able to distinguish between sentences that had similar surface structure but different deep grammatical structure (i.e. depended on the "minimum distance principle"); for example, "John wanted Bill to leave" in which Bill is the subject of "to leave", and "John promised Bill to leave" in which John is the subject of "to leave" but separated from the verb.

Children first applied the "minimum distance principle" to every sentence, then recognized exceptions but still made errors on both rule-based and exceptional sentences. They then developed correct responses to minimum distance sentences but continued to make errors on the exceptions. Finally they mastered both forms. Six to seven year olds were still in transition and only by nine years of age was there full mastery. Verbs "ask" and "tell" provided similar difficulties. Chomsky investigated pronoun relationships. Difficulty in relating pronouns (anaphora connections) recurs in reading comprehension at the late elementary school level.

In work on the passive transformation, Slobin (1971) found increasing mastery of passive, negative, and negative-passive forms from 6 to 12 years of age. Children were 6 before there was above-chance response to passive constructions. This transformation is an example of the effect of semantic information on grammatical structure; sentences which are non-reversible passives are easier than reversible passives. Non-reversible sentences are those in which the sense makes it unlikely that the relationship can be reversed, e.g. "The horse was ridden by the boy", as contrasted with the reversible "The girl was chased by the boy".

On reversible sentences, Grade 2 children got 60% correct. Not until Grade 1 or later can children be induced to give passives more than 50% of the time in appropriately describing an action. (Turner and Rommetveit (1967)). Surveys of everyday speech show that the passive is used only 1% of the time even by adults.

Other developments take place in connective words; e.g. "because", "therefore". Katz and Brent (1968) found developmental trends from Grades 1 to 6 in the causal use of the connective word as contrasted with a purely sequential use. Olds (1968) showed that children often used "unless" in the sense of "if". Goodglass, Goodglass and Hyde (1970) found that the correct use of prepositions ranged from 75% at ages 3 to 4 to 97% at 10 years of age.

In the study of categorizing, Neimark and Slotnick (1971) showed that children at Grades 3 to 9 could handle class inclusion and exclusion; i.e. class membership and set intersections in verbal classifying problems. They could cope with the terms "and/both". Only at college level was there consistent success in handling verbally problems involving the union of sets; i.e. "either/or" relationships. Neimark (1971) claimed that up to Grade 9 there was evidence of confusion in the use of "and" and "or" as logical connectives.

6.13 Advances in Semantics

6.13.1 McNeill (1970) points out that semantics -- the relationship of linguistic categories to reality and one another; e.g. animate/inanimate, male/female, and equivalences of meaning -- develops more slowly than syntax. Methods of handling semantic categories are still to a large extent being developed. Categories are to some degree arbitrary and may not wholly agree from one researcher to the next. Nerlove (1966) showed that whereas young children could correctly apply adjectives such as "sweet", "cool" to real objects, they did not realize they could apply these to persons until age 7.

Autistic children have difficulty in shifting from the concrete to the figurative. Ervin and Foster (1966) asked subjects to match the words "happy", "pretty", etc. with appropriate faces. From Grade 1 on, there was increasing differentiation between words originally used as if they had the same meaning. Lumsden and Poteat (1972) asked children to describe shapes of differing size (area) as bigger or smaller. They varied the vertical dimensions of the shapes. Even in shapes which differed considerably in actual area, they found that 5 year olds ignored this fact and concentrated on the vertical dimension as carrying the meaning of size.

Donaldson and Wales (1970) found that the terms "more" and "less" were complex and used in absolute ways by 4 to 5 year olds. Clarke (1974) as noted previously, proposed a "polar" theory of meanings in which words such as "bigger" and "smaller" developed their meanings as relative terms. Children began by identifying the absolute pole "big" and contrasted it with the opposite "not big", then "small". The concept of "bigger/smaller" as relative terms evolved as a continuum between these extremes.

Palermo and Molfese (1972) quoted developments from Grades 1 to 12 in using correctly modifiers such as "slightly, somewhat, rather", which are key words in semantic evaluation. See Osgood, Tannenbaum and Suci (1957) on the semantic differential test.

6.14 Morpho-phonemic Development

6.14.1 "Morpho-phonemics" describes the area of language development relating morphology -- changes in word forms to indicate meaning and syntactic category -- and representations in sound -- rules for changing stress, vowel form, phonological form. An example is the child's ability to recognize and use "ability" as related to "able", or recognize the change of sound and stress involved in the change from "electric" to "electricity".

Chomsky and Halle describe the intricate phonological rules linking change of phonology and meaning, and the way in which sounds are represented in English orthography. They see these as reflecting the deeper abstract relationships between phonological system and meaning, and the recognition of related forms and meanings. Children may be 11 years of age before they consistently master these changes. Moskowitz (1973) using nonsense word stems, was able to show that children had formed the rules to shift vowels appropriately when forming a noun from an adjective. Five year olds could not do the task but 12 year olds could.

There appears to be evidence of increased linguistic development or turning points at ages 5 to 8 and at 11 to 13. These may be related to the stages of cognitive development described by Piaget. Age 7 may be as important a staging point in general linguistic development as the 4½ year level is claimed to be for mastery of syntax.

Language difficulties or retardation measured at these levels are likely to be less obvious, but still important; they could be found in a relatively wide range of children.

6.15 General Development of Language Structures After Age 5

6.15.1 Crystal (1976) points out that by age 5 the spontaneous speech of children shows fluency and grammatical accuracy in surface structure, but it would be wrong to conclude that the grammar of the language has been successfully mastered. A large range of grammatical processes remain to be implemented on which there has been very little research. Language development is completed up to age 4½ in six stages. Crystal refers to Stage VII and makes three main distinctions.

Discourse Structure: the 5 year old knows a great deal about sentence structure and function but has to learn about sentence connection. The following syntactic structures are acquired between age 5 and adolescence:

1) Sentence connectors such as "however", and cross-connections; e.g. "the other also took one". Adverbials as connectives are not found until age 7.
2) Word-order patterns communicating emphasis and order; e.g. "It's John who said that".
3) The use of intonation to control relationships between parts of a sentence, which is still being mastered at age 9; e.g. "John gave the book to Jim and he gave one to him".

Eight year olds are also still learning irregular verb forms and mastering the two types of comparison; e.g. "longer" vs. "more interesting". Sequences in tense and subordinate/main clause relationships are mastered in this stage.

Syntactic Comprehension: because a child can produce a pattern, there is no guarantee that he understands it. For example, sentences with different meanings but identical structures such as "Ask him what to do" / "Tell him what to do", or "He told the boy to come" / "He promised the boy to come", as discussed above in Chomsky's work (1969). Other examples are the semantically complex conjunction "since, although, unless" which are confused with "and" up to 9 years of age.

In Stage VII, the child becomes more aware of ambiguities and that the "deep structure" of a sentence is not obvious from its surface pattern. It is at this time that children begin to enjoy verbal jokes, riddles, and play on words. Many, if not most, autistic children do not reach this level; i.e. they reach a 4½ to 6 year syntactic level but not necessarily a 9 year level.

Style: This is little studied. Style is affected by school experience, dialects, likes and dislikes in ways of speaking, and growing awareness of features of language. With adolescence, syntactical development in the proper sense ends a critical period in language learning and "spontaneous learning is more a matter of developing stylistic skills, writing, reading, and vocabulary".

TABLE I

Development of Syntax, Ages 9 months to 4½ Years (As given by Crystal et al (1976))

Stage I o.9 - 1.6 yr.	Single word question; Single word command "verb" and "noun" used but grammatical category tentative Intonation patterns specific to a given language; communicate meaning
Stage II 1.6 - 2.0 yr.	Two element sentences: statement, question, command Subject-verb; Subject-Complement/Object; Negation of a word "man gone" "that hot" Verb-Object/Complement "Not daddy" "see man: A with X, where A is an element such as "there" and X is: Subject, Verb, Object, Complement - "there toy" Phrases: Determiner-Noun "my ball" Adjective-Noun "big hug" Noun-Noun "daddy bag" Preposition-Noun "in box" Verb-Verb "make go" Verb-part "come out" Intensifier-X "very bad, down there"
Stage III 2.0 - 2.6 yr.	Three element sentences Blending of clause and phrase structures Clause: X, Subject-Noun Phrase "red shoes pretty" X, Subject-Verb Phrase "let man go" Statement; Questions; Commands Subject-Verb-Complement-Object Subject-Verb-Adverbial "boy sit chair" Negative XY - "no go home" Verb-Complement-Object-Adverb "put dog chair" Verb Object(direct)Object(indirect) "give candies mommy" Question XY "why daddy go" Command-Verb XY "put cat down" Let/do XY "let me go" "don't hit me" Phrase Determiner-Adjective-Noun "that big pussy" Adjective-Adj.-Noun "little blue ball" Noun-Adj.-Noun "Billy big boot" Pronoun-Noun Phrase "in the car" Copula "is"; Auxiliary "be(going) do(go)" Pronoun (object form) "me eat it, him see it" Word-level Beginning of: -ing "he be swimming"; plural "boys"; past tense -ed; past participle "broken"; 3rd person singular "he wants"

Possessive ("doggy's bowl"); contracted negative ("isn't"); contracted copula ("She's"); contracted auxiliary ("he's running"); superlative ("biggest"); comparative ("bigger"); adverbial suffix ("run quickly")

These are mastered in Stage III and IV

Stage IV
2.6 - 3.0 yr.

Sentences of four or more elements (blending 2 previous patterns; or new ones)

Clause Elements of structure well established

Statement
Subject-Verb-Complement/Object-Adverbial
"Mommy's making the breakfast now"

Subject-Verb-Direct-Indirect-Object	Adverbial/Adverbial XY
"You gave the cup to daddy"	"Me go in house in a while"

Question with any three structural elements. Inversion of subject-verb-noun. Question words in use. "Where my doggy going"

Command includes subject "You hit that ball"

Phrase Expansion of phrase, particularly pre-modifying noun phrase

Noun-Preposition-Noun	Pronoun-Noun Phrase	Negative X
"boy in the garden"	"near the big car"	"not that cup"
Negative-Verb Phrase	2 Auxiliaries to Verb	Conjunction X
"he not want to"	"he have been running"	"and daddy"

Morphology of words (i.e. changes in word form for meaning, plural, etc. well established)

Stage V
3.0 - 3.6 yr.

Recursion (Production of multiple, connected sentences)

Clause
Coordinating conjunctions, especially "and", "so"
Subordinating conjunctions, "She's smiling 'cos she's happy"
Noun clauses as subjects, "That bike parked in the street belongs to..."
Comparative clauses, complements or objects; relative clauses within noun clauses

Phrases expanded to varying degrees of complexity
e.g. preposition-phrases within noun-phrase "The lady in the shop with a hat on"
Tag-questions; inversion and negation of verb in question now mastered"Isn't it?" Exclamation "How" "What"

Stage VI
3.6 - 4.6 yr.

System Completion

Clause

Passive in extended form	More complex verb construction (complement)
"He's been hit by the ball"	"This is ready to drink"

Phrase
Mastery of common irregular verb inflections
"Ought, should, must" (modals) are used in anomalous ways.
Auxiliary "Can't, won't" etc. mastered since 2.

Noun Phrase

Coordination of many kinds: lists of objects, structures in apposition.

Initiators develop

all, half, double, quite, such, what: as in "What a day"

Most of the common irregular noun inflections are stabilized during this stage.

Errors in determiners (e.g. this) disappear by 4½.

Frequent errors in pronouns at 3½ (e.g. me see it) disappear by a year later.

Tenses are mastered but little is known about the order of development, or of use of adverbials of time and manner, i.e. "in" with verb forms.

Errors in appropriate tense aspect common before 4.

Mistakes in agreement, e.g. "they is", common at 3½, disappear by 4½.

Exceptional word order, e.g. "neither did I" are mastered.

According to Laura Lee (1974):

Children with delayed language development may

1. have reversal of word order in sentences or persist with reversals longer
2. have a variety of modifiers but seldom combine them
3. omit plural markers for a long time, depending on quantifiers and numbers to supply plural meaning
4. show the same errors on tenses as normal children, as mastery of the verb develops, but persist longer in immature forms
5. be expected to have all the difficulties in negation encountered by normal children
6. have difficulties with conjunctions even at earlier stages
7. find the use of the copula, i.e. "is", a difficult step to take .
8. In the acquisition of pronouns:
   person is the easiest semantic feature and children do not usually mistake "speaker-listener-other" distinctions
   gender presents more difficulties
   plural pronouns are slower in developing
   the proper selection of case forms is the most difficult.
9. Severely delayed children may not have the concept of questioning. They rarely ask "Wh- questions". Questions requiring "do" present problems.
10. Some language delayed children tend to omit the infinitive "to" considerably beyond the normal stage.

7 Language Delay and Deviation

7.1 Definitions of Language Disorder

7.1.1 The present study covers the whole range of language handicap in children. Delay and deviation may be difficult to distinguish separately in practice, but it is useful to try to do so.

The usual criteria of abnormality apply to language disorders:

a) how severe is the malfunction
b) how significant is the language disorder compared to norms
c) how persistent is the condition

Eisenson (1972) discussing aphasia, suggests that the most important aspects of language pathology are severity and age of onset.

Deviation in language is the failure of the child to acquire a language repertoire and competence appropriate to his age and developmental level. It may be based in abnormal processes in learning, or there is abnormal function in language. Deviation occurs in language structure and performance but, in severely handicapped children, it may occur in the pre-requisite stages for language:

a) poor attention to language or general stimuli,
b) no vocalizing of meaningful sound, or abnormal forms of vocalizing, inability to imitate speech sounds,
c) immature handling of common objects; inability to reorganize these in common usage,
d) restricted play with common objects or symbolic behavior: e.g. in using toys or in dramatic actions to represent ideas and feelings,
e) restricted ability to make imitative gestures (motor),
f) inability to realize that objects and actions can be identified and labelled.

This is not an exhaustive list but it specifies some of the prerequisite stages in the assessment of language function and in planning remedial programs. (See Bricker and Bricker (1974) and Miller and Yoder (1974))

Descriptions of language disability must: (Kleffner (1973))

1) give a framework for screening, assessment, and diagnosis
2) provide a comprehensive description of the child's performance at any stage of assessment
3) provide guidelines for direct, rational and efficient therapeutic intervention.

Crystal (1976) emphasizes that description and remediation must be in terms of language functioning and development. "To use a normal developmental hypothesis as a basis of ordering language structure has much to recommend it, as it is based on the fewest assumptions about the complexity of language process .... The analysis of a syntactic disorder inevitably involves comparison with normal development."

Crystal points out that there are levels of definition of language deviation:

1) deviation may be defined as covering all kinds of linguistic disability, including language delay,
2) deviation may be defined as the child's having a range of linguistic structures normally used at an earlier stage of normal development, but also uses specific structures outside the range of normal expectations,
3) the child has language patterns which would be normal at other stages but are clearly deviant at the present stage of development.

7.2 Language Delay

7.2.1 The presumption in language delay is that the handicap is due to a single discrepancy between development in language and general development. It is assumed that the child has the capacity to acquire language more or less normally by following the usual developmental sequence. Treatment may aim at bringing the child up to a required level of performance, or in accelerating him along the normal path.

Delay has many causes. It may be simply failure in maturation. Children can vary widely in their rate of acquisition of language. There may be environmental reasons in the culture of the child, the language stimulation in the home, or the teaching styles of parents. There are factors, such as being with a twin, which increase the risk of language delay. (See the famous case discussed by Luria and Yudovitch (1963). On the other hand, there may be organic reasons such as neurological dysfunction, delay in maturation of the relevant brain function or even biochemical or amino-acid dysfunctions of the brain. It seems likely that there will be an interaction between effects in causing language delay.

7.3 Language Deviation or Deficit?

The concept of deficit implies that more than delay is involved. There is likely to be a marked discrepancy between language and other levels of functioning, unless the problem occurs in the severely mentally retarded and some autistic groups where the total level of functioning is grossly delayed or deviant for age norms. There may be evidence that the child has established a distorted pattern of language learning or that there is a missing process or mechanism; e.g. inability to discriminate speech sounds, poor auditory memory. It is likely that there are abnormalities of language structure which persist from a much earlier period of development.

The deficit may be due to a variety of causes, neurological or organic factors, effects of accident on brain function; or of illness causing febrile-convulsive attacks and brain anoxia at an early age when language is being acquired or has just been acquired. There may be congenital aphasia, a developmental difficulty in acquiring language, or environmental causes. Again, the causes and effects are likely to interact in complex ways. In extreme, the child not only has handicapped performance in language, but may have deficient competence, i.e. be unable to acquire spoken language normally.

7.4 Factors Which Bear on Language Delay and Deviation

7.4.1 Briefly, among the factors which bear on the causes, history, etiology, classification and diagnosis of language disorder are the psychological, medical, neurological, educational and familial-social. Some of these, like the neurological, may have no direct relevance to the planning or carrying out of intervention programs. (Kleffner (1973))

Psychological: observations and tests of tasks and inferred processes of perception, discrimination, memory, vocabulary and general language functioning, cognitive functioning, emotional attitudes, behavior, and motivation.

Medical-neurological: inferences about effects which may impair effective functioning, particularly in articulation, auditory memory, producing and interpreting language; neurological handicaps and processes which may explain disorder.

Educational factors: level of play and other symbolic processes, ability to communicate with adults and children, level of language pre-requisites, social and personal skills, adaptive skills, response to material, persons, and kinds of learning situation.

Familial-social factors: child's home environment and relationships to his general adaptation and language development; emotional relationships and motivations, parental expectations, learning style adopted by parents in teaching and disciplining, support for school and language programs by the home.

7.5 Language Disorder and Normal Developmental Sequence

7.5.1 Crystal (1976) proposes, for assessing language deviation, a language criterion based on a developmental sequence, and not on a neurological or psychological criterion. For parents, teachers and therapists, the practical question is the amount of delay in language development relative to age and general development.

To assess delay, there must be an assumption that there is a scale of linguistic development, i.e.:

a) a normal sequence of acquisition of language structures and performance,
b) a sequence in the increasing complexity of language usage,
c) a statement on which pre-requisites are needed, at any given stage, before the child is likely to acquire the next stage of language competence. This is the reason for advocating knowledge of the normal development of child language, discussed in another chapter. To quote Rees (1971): "The assumption that the normal sequence is somehow the "right" sequence for the language-disordered child to follow is not proved, but neither has it been seriously challenged."

Ingram (1976) points out that disorder and delay are defined by: "slower onset of time of appearance of a language performance, less frequent and creative use of language, and slower acquisition time".

Using phonological development as his guide, Ingram (1976) shows that language deviation falls into the following patterns:

1a) in language performance, immature structures in terms of known developmental stages persist to a later stage,

2a) there are delays in language structure and these have persisted long enough to become serious, inappropriate to the stage of general development and so form language disorder,

3a) the child has language patterns which would be normal at other stages but are clearly deviant at the present stage of development.

There may be a continuum between delay and deviation. It is clear that prolonged and persistent delay in acquiring appropriate language structures will produce the situation defined in Crystal's Pattern 3 or Ingram's 2A; i.e. the adaptation reached by the child will be hard to modify. Delay in a very early stage, together with the reinforcement of responses which were appropriate at an earlier level, can lead to distorted patterns of response and therefore to deviation. Woodward (1963) describes how this fixation can occur in the responses of severely mentally retarded who remain in the first circular reactions of the Piaget stages.

Severity of disorder may be measured in terms of the language repertoire of the child. For example, the receptive language disorder is more impaired than the expressive. Certain aspects of language may be more critical than others; e.g. poor vocabulary is in some respects less pathological and easier to remedy than inadequate or distorted sentence structures.

Ingram proposes the following scale of severity of deviation:

1a) persistence of language structures from previous stages with no idiosyncratic language,
2a) persistence of language structures from previous stages with a mixture of unusual patterns,
3a) use of language patterns which are distinctly deviant from expected processes or systems of language.

The earlier the stage of language acquisition at which the child fails or deviates, the more severe the handicap is likely to be. If a child fails on a skill which is pre-requisite to acquiring a later skill, his handicap is the more if the skill is earlier or more fundamental. If a child fails on the less complex items of language structure, or fails to acquire more complex levels (such as transformation of sentences) his disorder is likely to be the more severe.

8 Early Childhood Autism and Language Disorder

8.1 Characteristics of Autism

8.1.1 A major group in this study are children with "autistic" behavior because they have a massive global communication disorder. (Rutter and Martin (1972)) Early childhood autism is the term suggested by Wing in 1976 as most appropriate.

The characteristics of this group form a particularly difficult and imprecise group to diagnose and define. A recent change of classification by the World Health Organization (1975) now defines autism as a severe learning disorder, no longer as an emotional disturbance or psychosis. This change of definition rests on three decades of research and the fundamental changes in perception and interpretation of the causes of this handicap.

This group displays a variety of severe disorders (Ritvo 1976):

1) disturbance in developmental rate.

2) disturbance in relating to the environment. For example: gaze avoidance; delayed response to being picked up in infancy; tendency to relate to only part of others; possible aversion to physical contact; using materials and toys in a repetitive manner rather than for exploration and play.

3) disturbances of motility. For example, ritual movements of hands and arms; whirling and posturing; rocking and head-banging; unusual gait such as running on the toes.

4) disturbances of perception; preference for sameness; disturbance by change of stimulus, especially strong stimuli; over or under reactivity.

5) disturbances of speech and language: delay, echolalia and repetition; lack of normal intonation, inflection, and affective quality.

Autistic children may display social withdrawal in early childhood, and stereotyped and ritualistic behaviors. Many of these seem to serve the purpose of self-stimulation in an organism which has severe distortions of perception and processing of information. There may be a need to preserve "sameness" in the environment.

Research in the last decade stresses the idiosyncratic learning of the autistic child; i.e. excellent short-term rote learning but severe difficulties in using meaning to make learning efficient; difficulties in relating information from different sense channels and difficulties in coping with auditory input (O'Connor and Hermelin (1970))

The progress and causes of autism are still a matter for debate. An original belief was that the condition was psychogenic, "due to family relationships". The present accepted view stresses the possibility of organic causes -- brain malfunction, neurological damage or biochemical anomalies. Many autistic children are functionally at the level of severe mental retardation. Prognosis for adult adjustment is often poor (Martin (1975), Rutter (1967)). Autistics, especially at the late adolescent level, are likely to be found in hospitals for the mentally retarded.

Not all autistic children follow the same pattern. A number of check lists of characteristics have been published. (Creak (1961); Rimland (1964); Lotter (1966) and others) It is possible to give only a brief acknowledgement of the complexity of this condition and refer the reader to recent studies: Rutter (1972); Wing (1976); Ritvo (1976). In the present study, the check list of characteristics of the "core" autistic prepared by Lotter in establishing the prevalence of the group, in his Middlesex study, was included as a guide in the questionnaire used by the research team.

8.2 Prevalence of Autism

8.2.1 Establishing the true prevalence of early infantile autism is not an easy matter because so much depends on the definition and diagnosis of this difficult category of handicap, or group of handicaps. There is, however, a good estimate of prevalence by Lotter (1966), based on a careful epidemiological survey of the county of Middlesex (U.K.) using public health, medical, and school sources. The generally accepted estimate, based on this work, is 4 per 10,000 of the child population.

This includes, in Lotter's study, all children with characteristics placing them in the autistic group which was defined by a check-list of characteristics. The "core" group of autistics; i.e. those with a majority of the signs on the check-list, and in whom the condition occurred in early infancy, formed 2½ of 10,000.

No survey of this kind has been done in Ontario, though it is known that a former officer of the Ministry of Health, in 1974, (now working as a consultant with a board of education) made contact with all known cases in the province. The Integra Foundation also reviews cases brought to its attention for membership of programs, but the present study confirms that this is not an exhaustive list. The Ontario Association for Autistic Children is said to be conducting a survey via parents.

8.3 Disorders in Autistic Language

8.3.1 "Language disorder is the most important diagnostic factor in autism". (Rutter (1967); Wing (1976))

Between 1/3 and 1/2 of autistic children fail to acquire language. (Rutter (1971)) The disorder extends to all areas of language:

Phonological: intonation and articulation, including toneless and uninflected speech.

Syntactic: condensing utterances into telegraphic form (Wing (1976)); tendency to omit function words; to confuse word order; to operate at the earlier stages of sentence structure; difficulties in forms such as pronouns and prepositions; difficulties in areas of language involving abstracts or when meanings change with the situation or person involved.

Semantic: difficulty in acquiring/using the multiple aspects of meaning; in different words for the same object; in idiomatic or figurative uses of language.

Interesting work by Ricks (1976) suggests that autistic children show idiosyncratic development of babble. He demonstrated that parents of normal and autistic children could identify four emotional situations -- surprised pleasure, frustration, etc. -- communicated in the babble and intonation of children who have been tape-recorded. Parents of normal children could accurately identify their own child from his babble, and found no difficulty in interpreting the feelings communicated by children from non-English-speaking backgrounds. By contrast, parents of autistic children were unable to identify the feelings communicated by autistic children other than their own, though they were able to interpret the vocalizations of mentally retarded children as essentially normal. Parents of autistic children apparently learned to respond to the specific cues in the babble of their own child.

It is worth noting that the normal children studied were young babies; the autistic children who could be compared with them in terms of babble were 3 to 5 years of age. It seemed that non-verbal autistic children were communicating mood and response to specific situations in idiosyncratic ways; they were using peculiar articulations rather than normal intonations.

The early stages of articulation in young autistic children are different from normal. There are differences in quantity, variety, and length of phrase or babble. Ingram (1976) takes the view that babbling is not simply motor practice, as suggested by Jakobson, but that infants begin to select the range of speech sounds typical of their adult environment; i.e. there is some evidence for feedback to the child from the environment and the child's own sounds and kinesthetic stimuli which enables him to monitor and adjust his pattern of output -- even if the old theory, that a child simply imitates the language of those around him, is no longer tenable.

The feedback mechanism of the autistic child may be peculiar. Ricks demonstrated that the young autistic child responded precisely by copying his own recorded babble but was not stimulated to vocalize by hearing other children. Normal infants, by contrast, were stimulated by hearing recorded babble even if it were not their own.

Articulation problems were found by Rutter (1965) and Wing (1969) in three-quarters of 20 speaking autistic children under age 5, though these improved with age. Kolvin (1971), in a study contrasting autistic with schizophrenic children, found that 88% of autistics had delay in speech, and 13 out of 47 had produced only one word by three years. The majority were not using 3-word sentences by age 3.

Savage (1971) reported that, in the series of autistic children studied by Rutter and Lockyer, 40% had articulatory difficulties. Ornitz and Ritvo (1971) found that the voice was poorly modulated, lacking rhythm and expression. Kopernick (1971) described the autistic's language as puppet-like, with abrupt variation in pitch and frequency, and Wing comments that the intonation pattern is wooden -- "like a computer talking".

8.4 Understanding Language

8.4.1 Normal children respond to adult vocalization early in infancy. The autistic child shows a marked lack of response to human speech in the first year of life. This is accompanied by (and may be caused by) deficiencies in non-verbal communication between child and parent in earliest infancy. In normal development, studies show interplay between child and mother -- smiling, making gestures with the mouth, visual exploration of the mother's face, anticipatory gestures when approached and held. The mother tends to imitate the child's response, to initiate non-verbal "conversation" in which the child is led to develop the ground rules for later communication. The autistic child's failure to respond to this basic "conversation" is one of the reasons why parents comment that "something was strange" in their early interaction with the autistic child.

Even up to 5 years of age, the autistic child may attach little significance to speech. "The growth of understanding is characteristically slow" (Wing (1976)) Severely retarded autistic children may develop no awareness of speech.

Those who do acquire speech show characteristic problems: their replies to questions are concrete and limited. They list facts or events but do not make judgements or express feelings. Offered a choice, autistic children find difficulty in verbalizing and may automatically repeat the phrase last used. They have difficulties in dealing with instructions, especially those involving a sequence of actions, or timing response.

Parents need to be aware that even when words are acquired, they are understood and used literally. For example, a child who used the expression "dog's dish" was confused when asked to put food in the "dog's bowl". (Wing (1976)). Bartak (1974) claims that the autistic child's greatest difficulty is in understanding those aspects of language which change with context or speaker.

Those dealing with autistic children have found it useful to: avoid complex statements, speak clearly and loudly, use rising intonation, repeat, and give time for the child to process the language. (Wing (1976)) These observations are like those made concerning aphasic language; e.g. need for extra emphasis and additional time for processing meaning.

Experiments by O'Connor and Hermelin (1971) suggest that when autistic children of elementary school age are offered a choice of auditory and visual stimuli, which can be altered in their relative intensity, these children showed no preference for auditory input. Autistic children will make contact with a strange adult but ignore verbal overtures.

8.5 Production of Speech: Intonation and Articulation

8.5.1 There is little research on intonation. The Soviet linguist, Schvachkin, detected distinct patterns of stress, with rising and falling pitch used to communicate feelings between adult and child within the first six months of life. Crystal (1972) describes the prosodic melodies of children developed to express meaning within the first nine months of life; they form the clearly marked intonation patterns heard in the "jargon" of children in the period immediately preceding their first word.

Phonological deviations were found (Wing (1976)) such as: omitting initial or final sounds, substituting sounds, confusing similar syllables or words. These sound similar to the normal systems of delayed speech described by Ingram (1976). Most of the language differences of autistic children are described in general clinical psychiatric or psychological terms, and Wing's observations, though perceptive, are not those of a trained linguist. There appear to be few, if any, linguistic studies of the precise differences in the phonology of autistic children at different degrees of severity of language handicap. Conclusions cannot be reached on whether patterns are markedly deviant or simply delayed in development.

As Savage (1971) and others emphasize, the most characteristic difficulty of the young autistic child is in encoding his experiences in symbolic form. The difficulties are not simply in articulation or speech. Even if speech production improves, autistic children have basic difficulties in the understanding and expression of language.

There is marked contrast between the clear enunciation of the autistic child repeating expressions in echolalia, and the great effort evinced to produce spontaneous speech which is often poorly articulated. Carrow (1972) comments on this phenomenon in language-disordered children who switch from mastery of automatic repetition to making errors, repeating stages of language acquisition, when they attempt to organize their own expressions.

8.6 Syntax and Grammatical Structures

A major difficulty for autistic children is the production of coherent sentences and mastery of grammatical forms. Wing (1969) found that half of twenty children in special facilities for the autistic had problems of syntax. There was a marked tendency to contract phrases, producing telegraphic forms or simply strings of words. For example, "Hut stick walk." for "We went for a walk to the hut and found a stick".

Word order may be confused as in children with developmental learning disability. Function words such as prepositions may be used incorrectly: e.g. "You sit for chair in table".

When young children formed a new linguistic rule, they exaggerated the tendency of normal children to over-generalize. One 9 year old used "ing" forms in many situations; e.g. "Daddy piping" (smoking). They used inappropriate tag questions; e.g. "Isn't it?" after each statement, or generalized the relationship to "Wasn't it? Won't they?" to fit the plural for or past tense of the preceding statement.

Other studies confirm Wing's observation that "only a small proportion of autistic children eventually acquire correct rules of grammar or talk in complete sentences".

8.7 Semantics and Understanding

8.7.1 Even if syntax is normally acquired, underlying handicaps in understanding and using language for meaning appear. Bartolucci (1977) found that normal syntax was developed, according to the transformational model of grammar, in verbal adolescent autistics he studied. Nevertheless, language was not normal when considered in terms of full range of feeling and communication. It seems that alternative explanations of language or grammars (such as that of Halliday) must be adopted in order to allow for true description of the linguistic and psychological characteristics of autistic language.

Sentence patterns may be correct, but are expressed in stilted stereotyped form. The range of discourse is narrow and detailed examination reveals stereotyped repetitions and phrases. The autistic can give concrete specific information about subjects which interest them, but it is most difficult for them to make judgements, evaluations, or express personal feelings effectively. The autistic child may use a series of questions, but if the respondent departs from specific, concrete, simple replies, the child is confused.

There is a tendency to choose words without feeling for context; there is a failure to grasp or express the full range of meanings involved in receptive or expressive language. Similar-sounding words may be made up; e.g. "teapotmental" for "departmental". Words may be created in terms of use; e.g. "sweep-the-floor" for the word "broom" -- similar to the response of the young child or the adult aphasic searching for an appropriate word.

On the phonological level, there may be confusions and inversions. For example, "pladding pool" for "paddling pool". The lack of variation in tone of voice reflects lack of grasp of meaning, but also difficulties in using the intonational patterns which communicate the syntactic pattern in English.

Conversing with an autistic individual has been described as holding a discussion with a computer. Spontaneous speech may be marked by great effort. The autistic child sounds like someone speaking a foreign language which has been acquired painstakingly, late in life, and this analogy may be a key to his communication difficulties.

8.8 The Autistic's Way of Learning Language

8.8.1 The normal child acquires his language by forming successively more complex and complete linguistic structures and rules, apparently by a process of active search and discovery. (Browne (1973); Braine (1971)) The major process is not passive imitation and acquisition of specific language patterns, and chains of response through operant conditioning. The normal individual acquires the capacity for generative language, that is, the ability to produce infinite numbers of variations on the basic pattern and to use language recursively; i.e. embedding one structure within another in complex ways. This capacity is difficult to explain by the theory that language is simply a set of habits formed by operant conditioning.

By contrast, the autistic child, as Wing and Ricks point out, does behave as if he learned his language by operant conditioning, and by chaining together simpler units to make the more complex ones. It is as if the autistic child operates on a finite-phrase, structure-independent grammar in which units are built up simply from left to right in sequence. It is usually necessary to use imitation and operant conditioning to teach the autistic child structures. The question is whether the child can generalize his learning of specific structures to allow him to make the leap to truly creative language.

The autistic child's difficulties in learning language are not in verbal memory. Hermelin (1972) showed that 11½ year old autistic children were at the same level of linguistic development as normal 4½ year olds, could recall word and number lists, and were able to use the information given by stress on key words. The autistic makes use of literal recall, not using the semantic structure in the material; e.g. classifying words under headings, clustering them and using this property to make it easier to rehearse and remember meaningful verbal material.

The "literal" response of the autistic has been well documented by O'Connor and Hermelin (1970) and elsewhere. When given a series of words to recall, autistic children did not make use of the fact, as did normal children above the age of 5 years, that all or part of the message could be organized and remembered as a sentence, or that the words in a series were in repetitive patterns that could be memorized. Hermelin, describing these experiments, uses the dramatic term "echo-box" to describe the autistic child's precise and literal memory/reproduction of information. This contrasts with the normal child's ability to code and categorize information and relate it to existing information in meaningful ways.

Similar responses were found when autistic children were asked to recall or to produce the next segments of a repetitive visual pattern formed by lines with simple relationships. They produced more literal (memorized)responses, made mistakes which showed they were responding more to the repeated pattern units than to variation between them; i.e. did better with patterns such as "abab" (3 changes) than with "abba" (2 changes), or their visual equivalents. They showed much less flexibility and "creativity" in responding to variation in pattern, except, strangely, in producing musical patterns. (Frith (1972)) The language deficiency is based on a more general disorder of processing, categorizing, coding, interrelating and recalling patterned information.

Vygotsky (1962) described as "regulatory" the use of language to direct one's own behavior, to anticipate and to plan. The regulatory use of language is affected in autistics.

Normally, such regulatory uses of language develop from response to the commands of others, and speech is used overtly to describe and control action until the process becomes internalized by age 5 or so. Luria (1961) describes the stages of response in the young child, emphasizing the important role of language in the processes of developing attention, in planning and programming a sequence of anticipated activities, in setting out alternatives, and in evaluating action. These processes he sees as closely linked with both language and the functions of the frontal lobes of the brain.

Luria also stresses the social origins of the language process in communication and control between the individual and his social environment. Control loops which were originally external to the child as verbal and non-verbal directions become part of the child's complex system of inner controls. A major difficulty of the autistic child is self-programming. Wing (1976) describes the dependency of even well-organized autistic adults on automatic responses and routines.

8.9 The Acquisition of Spoken Language in Autistics

8.9.1 Of 63 children in Rutter's 1967 follow-up study of a group of children, only one had a history of normal language acquisition. The majority of autistic children who acquire words do so by age 5. In Lotter's 1966 survey, 19% were still mute at 8 to 10 years of age. Of those with I.Q.'s below 55, 31% had words but did not communicate.

Whereas the normal child acquires his first "sound label" (Ricks (1976)) for an object and uses it with excitement, showing enjoyment of sound and word, the autistic child does not display this early interest. There is no rapid generalization of first words, only a monotonous intonation and a lack of overall curiosity about the environment in the first two years of life.

There is, however, later improvement in comprehension, expression, and articulation among children observed who attend schools for autistic children. (Wing (1971)) It is claimed, by residential schools for the autistic in England, that a high proportion of the children that are non-verbal on entry later acquire language to some level, even without specific and specialized language programs (Professional observation during survey of U.K. schools, 1976).

A small number of autistic children have large vocabularies and normal grammar by age 6 but language is still used in concrete and inappropriate ways. In general, language level is closely related to tested intelligence, but some children with high ability still have articulatory or receptive problems. Level of language and intelligence score were found, in a series of studies by Rutter, to be major predictors of level of adjustment in the autistic child.

8.10 Echolalia and Pronoun Reversal in Autistic Language

8.10.1 There is some doubt about the alleged differences between autistic language and that found in developmental language disorders. In imitative repetition, the aphasic and the autistic were not significantly different in all respects. Aphasics showed more appropriate repetition of their own words and the words of others. Autistics showed more delayed reaction, and tended to produce inappropriate repetition of their own words and in imitative language in general. (Bartak (1972))

Echolalia (the apparently exact repetition of an utterance made by another person) is claimed by Wing (1971), Rutter (1965, 1971) and de Hirsch (1967) to be characteristic if not typical of autistic language. Wing and Rutter reported it in three-quarters of the children in the groups observed by them.

In delayed echolalia, the child repeats literally something he heard some minutes or even hours ago, in a quite inappropriate setting, as if a specific pattern had been triggered off. It is possible, however, that delayed echolalia reflects the unusually slow processing of language by the autistic child, or unusual process of memory; i.e. the stimulus heard takes unusually long to process when it has been "read in" to the child's computer, and emerges at a time when it is no longer appropriate, or it may be delayed or detoured in memory storage. Echolalia is meaningful in the child's response, despite being apparently a senseless repetition. Its adaptive nature is shown by the following:

Developmentally, to echo the last utterance is common in the 16 to 20 months old child who is entering the stage of spontaneous speech. It serves linguistic purposes -- practice in finer discrimination of phonological/articulation patterns, checking of feedback, delay while the sound and meaning of previous utterances are processed. Normal children, when asked to imitate, change the structure of sentences in the direction of their own grammatical system if the sentence is too long or complex. (Menyuk (1964, 1969)) Language-disordered or language-delayed children, on the other hand, repeat more exactly or simply leave out parts of the utterance, as if it was a simple memory test. That is, when there is lack of comprehension, it is more likely that reproduction is by rote.

Autistic children, with their "echo-box" storage and their lack of response to meaning (Hermelin, Frith (1972)) also repeat exactly within the limits of their memory for the individual sounds or words forming the message. This finding suggests that echolalia is likely to occur as a surface response to the utterance when comprehension is lacking.

Stengel (1947), from psychiatric practice, demonstrated that echolalia occurs in many conditions when there has been disturbance of cognitive and language functioning -- in adult aphasia due to stroke, encephalitis, psychotic conditions, or severe mental retardation. He traced different levels of response which would be related to recovery of function in his patients. These ranged from automatic, meaningless, exact repetition cued to a previous utterance, through repetition with a questioning intonation, and in the final stages of improvement, the correct transformation of the pronouns "you" and "I" before the patient reached the final stage of answering the question or giving a spontaneous related utterance. If improvement was not complete, the response might become fixed at any stage.

The occurrence of echolalia in this predictable sequence, in so many different conditions involving disturbance of cerebral functioning, suggests there is a common neurological process underlying this form of linguistic adaptation.

Wing described a similar set of stages in development in autistic children; i.e. from purely rote to appropriate repetition. Rutter and Wing found that echolalia improved or disappeared with age.

Cunningham (1971) showed that there was significantly more echolalia among autistics than among children with severe mental retardation matched for age and I.Q., and there was significantly more in those with less developed language.

Evans (1972) provides clear evidence that echolalic response is considerably more frequent when the stimulus is incomprehensible. He described an autistic girl who became markedly more echolalic when she could not understand the slides he showed her. Evans quoted Matheney (1968) to the effect that a child he observed gave many more echolalic responses when the language used was "tacts" (in Skinner's terminology) and not "mands"; i.e. statements or questions as compared with commands or expressions of need. Echolalia therefore depends on the language stimuli the child is attempting to process, and his degree of understanding.

The situation is not unlike that encountered by a normal person in attempting to learn a new language. When an utterance is not understood or needs time for interpretation, it is quite natural to repeat it in whole or in part. In this sense, echolalia is not simply a stereotyped response but is clearly an attempt by the child to adapt to a new language stimulus he cannot understand.

Evans points out that echolalia needs to be viewed in a context in which all the physical materials and the relationships (the language gestures, reinforcements, etc. controlled by the teacher) are fully analyzed.

There is a major distinction between the choice of programs which set out to develop speech for the first time, and those which elicit and shape existing speech. The echolalic response is a spoken response which may be manipulated and modified in order to lead to speech which is more under the control of the teacher, and finally of the child. It may be appropriate and useful to make use of echolalia, varying the physical and linguistic situation, and using prompts and fading out in order to alter the child's response in the direction of language which is nearer a conversational response or to spontaneous utterance.

The Santa Barbara Autism project usefully distinguishes between immediate and delayed echolalia in assessment, and suggests use of echolalia to generate linguistic response.

Reversal of pronouns is a linguistic phenomenon built into the process of literal echolalia. Wing comments that, in a minority of autistic children, the pronoun reversal disappears in those phrases containing "I" which can be specifically taught and correctly used; e.g. "Please may I..." but that the reversals of "you" and "I" still occur in situations in which the child is simply copying.

9 Developmental Language Disorder

9.1 The Concept of Aphasia and Language Disorder

A major group of the severely language-disordered, or aphasic, are, by definition, children with receptive or expressive disorders of central language processing. They have been labelled "congenital aphasics" or "developmental aphasics".

Critchley (1970) urges the rejection of the term "aphasic" to describe non-development or disorder of language in children. He comments, "A child who is backward in the acquisition of speech should not be described as a victim of congenital aphasia. Still less should a child with innate defective auditory perception of the meaning of verbal symbols be spoken of as a case of childhood aphasia."

The concept of aphasia is derived from the pathology of adult language; much of the research on pathology of language is based on heterogeneous clinical adult cases. (Travis (1971)) Loss or distortion of mature language function in adults is quite different from failure to acquire spoken language, or delay, in the child.

Rutter and Martin (1972) find the label "aphasia" unsatisfactory because of its generality, imprecision, and suggestion of a clinical disease or neurological malfunction as underlying cause. Still, they find the label useful for explanatory and descriptive use but insist on additional detailed description of language and behavior.

Griffiths(1972) also finds the term "developmental aphasia" useful in describing children with specific disability in normal development of language. It is called a specific disability because it cannot be readily explained by factors such as mental retardation, hearing handicap, or motor-speech impairment. The "developmental" aspect refers to the fact that this disorder begins in the earliest years of the child's life, when he is acquiring spoken language. The category suggests severe and persistent disorder, or failure to develop comprehension or production of spoken language. The distinction has been fully discussed elsewhere. It may be difficult to make in individual cases.

To preserve continuity with the clinical and research literature, it is proposed to retain the term "developmental language disorder" or "aphasia" as necessary to distinguish this group of children.

9.2 Definition of Developmental Language Disorder/Aphasia

This is a condition in which there is marked failure or difficulty in comprehending or producing spoken verbal symbols. It is not due simply to inability to articulate speech sounds, or to neuromuscular inefficiency or paralysis of the speech organs. Nor is it simply the result of reduced or distorted sensory input of spoken language, as in hearing handicap. The disorder is not due to inefficient general cognitive functioning (mental retardation) but to a specific disorder of spoken language and related symbolic processes.

9.3 Characteristics of Children with Developmental Language Disorder/Aphasia

1) Receptive aphasia -- restricted understanding of speech.

2) Immature or deviant syntax -- order and grammatical relationships in utterances.

3) Restricted understanding or production of words or, more properly, difficulties in the semantic aspects of language; the ways in which linguistic categories, such as words and phrases, categorize experience, the relationship of words to other words, or, in general, meaning.

4) Severe difficulties in articulating phonemes or words, associated with other difficulties in language.

Griffiths, in her review of developmental aphasia, revives the concept of "congenital auditory imperception" as characteristic of aphasia; i.e. impaired perception of and/or memory for speech sounds. This concept goes back at least as far as Worster-Drought (1929) or Ewing (1930) and an old term was "central deafness".

Griffiths also emphasizes the importance, in language disorders, of impairment of perception of temporal pattern in speech sounds. Sequences of repeated and varied sounds, with pause and rhythm, are fundamental to speech. Crystal (1972) shows that the "prosodic" pattern (intonation and related factors of stress and pitch) enter in an important way into understanding of spoken language, from age 9 months onward. Griffiths' own study of a carefully selected group of young children with severe language disorder confirmed the difficulty that both receptive and expressive aphasics have in their sense of rhythm and in auditory memory for digits and sentences.

Whereas normal adults require some 20 milliseconds to make 75 per cent correct judgements that two sounds of different pitch are in a particular order, aphasic adults require nearly one second to make the same judgement (Efron (1963)) In another study, of children aged 7 to 14 years, Lowe and Campbell (1965) found that normals needed a mean of 18 millisec. to establish that one sound followed another, but aphasics needed 35.8 millisec. Whereas normals could make correct judgements of sound at 36 millisec., aphasics needed intervals of 357 millisec.

Several studies (Myklebust (1954); McGinnis (1963)) found that adult aphasics understand speech better if delivered more slowly than normal. Luria (1970) comments that, when there is malfunction in distinguishing a series of repeated sounds, there is often improvement if the series is repeated more slowly.

McReynolds (1966) found that aphasic children of 4 to 8 years of age had more difficulty in discriminating speech sounds within a phonetic environment than when they were isolated. Luria (1970) also makes a similar point about the importance, for language, of being able to distinguish speech sounds within a flow of significant sound.

9.4 Hypotheses on the Cause/Nature of Aphasia

Eisenson (1968) suggested that the discrimination and classification of phonemes is impaired in children with developmental language disorder. They may respond to a range of contrasted phonemes (such as s/ f/ t) as if they were the same set, or make such fine phonetic discriminations between phonemes (the s/ in basket, set, eats) that they perceive these as all different. That is, they over- or underclassify speech sounds.

A major hypothesis advanced by Eisenson is that this disorder is essentially auditory, depending on discrimination of phonemes in context; i.e. there is discrimination of isolated phonemes but impaired discrimination of phonemes when these occur in a flow of speech. The process of producing speech is hampered or distorted by deviant input.

Weiner (1972) takes the opposite view -- that the difficulties of producing language are the basic ones. He demonstrates that aphasics have difficulties in making oral responses even apart from speech activities; that they are handicapped in producing repetitive tongue and oral movements and fine specific movements of articulation in addition to possibly having articulatory handicaps such as jumbled speech sounds or sentences.

Luria, in his analysis of "acoustic" aphasia, in adults, describes an impairment of auditory perception, as in Eisenson's description: failure to discriminate and classify speech sounds normally, as a result of malfunction of the left temporal lobe. But, he also describes two kinds of "expressive" aphasia: kinaesthetic, claimed to result from failure of feedback from the production of significant sound in the speech system, and "kinetic" aphasia in which there is breakdown in motor planning and production (inability to initiate articulation even though the actual mechanism of speech organs is intact).

Luria therefore bridges the two positions by suggesting that there are both receptive and expressive varieties of aphasia, independent of one another but also sharing common factors of auditory impairment and motor feedback.

A third hypothesis advanced by Eisenson is that the child's storage system for speech sounds is defective. If the child cannot store organized sound segments in order to recall and reorganize them, he will behave as if deaf. If he can store sounds only briefly, he may be able to process sufficient information to imitate this immediately, but not if the delay is too long or the sentence too long or complex causing memory-overload.

This is reminiscent of Menyuk's (1969) comments on the difficulties in auditory memory shown by groups of children who had delayed "infantile" language. It also helps to explain the attempts at speech made by some receptive-aphasic children. Luria describes a condition of impaired verbal memory which he distinguishes, in terms of the cerebral areas and functions involved, from acoustic aphasia.

There is evidence that control and storage of auditory speech events are different from those for non-speech sounds: Liberman, Cooper and Shankweiler (1967), Studdert-Kennedy (1970) and Luria (1971).

Gallagher (1976) suggests that language-disordered children tend not to engage in the same extensive "hypothesis testing" for language as do normals. They may be quiet, do not rehearse nor appear to enjoy play with speech sounds (Blacklock and Johnson (1974)). See also Browning's (1972) account, as a parent, of the development of a young aphasic child.

9.5 Articulation and Auditory Factors in Aphasia

The distinction between impairment in articulation and auditory factors may be arbitrary. Soviet psychologists emphasize the intricate relationship of the sensory-motor link in skilled activity and of motor programming and anticipation of an action. Soviet studies of child language emphasize the contribution of the motor-articulatory response to the development of auditory perceptual response in language.

Even if the sensory/perceptual aspect is the most dominant, articulatory feedback plays an important role in the acquisition of phonemic discrimination. The perceptual and articulatory links become increasingly integrated in complex ways through feedback. It seems likely that there is an interaction between perception and articulation in development to produce finer tuning of perceived phonemic similarities and contrasts.

Ingram (1976) suggests that the speech production sequence is not a simple one but depends on (1) the child's perception of adult speech (2) processing through his own language system, and (3) production through his own articulatory system. The whole phonological system is organized to define and communicate contrasts of meaning, however deviant or immature it may appear to be, and this system interacts with the semantic (meaning) and syntactic systems.

In view of the variety of language disorders, it seems reasonable to assume that some aspects of impairment might be due to difficulties of input (the auditory or sequencing hypothesis); some to difficulties in processing or coding within the language system, and some due to difficulties in output. Or there may be intricate interactions between these various factors.

9.6 Variation, Heterogeneity and Classification in Aphasia

Attempts to classify the variety and levels of impairment in aphasic children followed similar patterns to adult aphasia. It seems likely that there is a continuum of handicap, with overlapping between individual and groups in the kind, variety, and severity of their language disabilities.

Reference to clinical descriptive categories such as "dysphasia", "apraxia", "agrammatism", "anomia", etc. may be meaningful for an individual clinician but does not specify precise forms of behavior or language performance. (Crystal (1976)) Effective assessment and rational planning of programs must be based on specific descriptions of language development and structures rather than on labels or clinical groups. Medical, neurological, and psychological assessments have a contribution to make, but even more important are detailed observation and analysis of general learning behavior, play (where relevant), symbolic behavior and specific linguistic performance. Only language performance -- specific linguistic structures and developmental levels -- is the basis for rational, planned intervention. (See such diverse authorities as Kleffner (1973) and Crystal (1976) on this point.)

9.7 Receptive Aphasia

Despite the wide variety of impairment, it is useful to classify children into expressive and receptive aphasics. There is significant overlap in practice. "Pure" receptive aphasics are reported to be rare (Rutter and Newman (1972)) and are likely to need specialized programs or school placement.

Among the difficulties of receptive aphasics are a) problems in the localization of sound; b) marked oscillation of auditory threshold and inattention to auditory stimuli (Benton (1964)). There can be grossly impaired comprehension of spoken language, so that children act "as if deaf". (See Griffiths above) There is significant discrepancy between non-verbal test scores, or observed level of ability and understanding of spoken language. Receptive aphasics normally have no speech, grossly defective articulation, or produce only limited speech sounds.

McGinnis (1966) describes four types of receptive aphasics: 1) silent; 2) echolalic; 3) with jumbled speech sounds; 4) possessing speech but garbled. This last grouping illustrates the heterogeneity and overlap between receptive and expressive groups. Many cases of receptive aphasia show some hearing loss on audiometric tests (Griffiths (1972). Eisenson (1970) puts the percentage with hearing loss at 30%. Ewing (1930) identified significant levels of high-tone deafness in 6 out of 10 aphasic children.

9.7 Expressive Aphasia

Expressive aphasics may not babble until the second or third year of life, or not at all. They can communicate by gesture and vocalizing. First words may not appear until age 4 or 5, when the normal child's basic language is well established, and syntactic patterns (two words or more) may not appear until age 6. These limited patterns of vocalization may be accompanied by difficulties in articulation, in imitation as well as production of speech patterns, but without actual motor impairment. Understanding of simple speech at appropriate speed may appear normal for everyday conversational purposes (Griffiths (1972)).

Intelligence is usually in the average range on non-verbal and observational measures. Language, when produced, may be telegraphic, recapitulating the stages through which normal children go when acquiring syntax, (Brown (1973)); or consists of words which are out of order or have incorrect grammatical relationships, i.e. syntactical disorder is crucial. Language may appear in the process of maturation, though considerably delayed, but is likely to need intensive structured intervention to stimulate it if there is severe disorder.

9.9 Prevalence

This is a knotty problem. Estimates of prevalence depend on the precise definition of level and severity of impairment. The core group -- those requiring special structured programs, intensive therapy or placement in special schools -- is likely to be a very small number compared with other varieties of handicap. Rutter and Martin (1972) review studies which suggest prevalences of about 7 per ten thousand, and 1 per thousand. This is of the same order as estimates of "childhood autism" -- 4 per ten thousand.*

Estimates can increase considerably if the criteria for admitting children to the language-disordered group are relaxed.

One major difficulty in interpreting statistics is that they classify together speech and language disorders, and the speech (articulatory) disorders are likely to be more frequent. Even modern texts on handicap fail to distinguish clearly between speech and developmental language disorder, giving considerably more space to discussion of articulatory disorders.

There is little doubt that the estimates of prevalence of language disorder could be considerably increased if all cases of language delay and the subtler forms of language deviation are included. In other words, there is no firm estimate of the extent of language disorder. No full survey of prevalence appears to have been done in Ontario. Available estimates are likely to be the pooling of data from various boards of education whose practice in assessment and provision is likely to vary quite considerably, or from the clinical data of workers in the field.

9.10 Cautions in Estimating Prevalence: Guidelines for the Present Study

In this study, it is assumed as guideline that the prevalence of severe communication disorders will be at least equal to the effect of adding estimates of numbers of children with developmental language disorder, as above, and of children with early childhood autism, viz. from 10 to 14 per 10,000.

It was assumed, in giving guidelines for gathering subjects for the present study, that the proportion expected might be in the region of one per thousand of the school population. It was assumed, however, that there might be variations of the order of at least twice this proportion between one board of education area or facility and another, because of the small numbers involved and the marked effects of random variation. If proportions reported for a board varied by more than about 2 or 3 times that expected, it was clear that a different definition of language disorder, and a different population was being presented. As noted, this was checked by the research team who could bring to bear their experience of all the areas visited in comparing and calibrating. In this field of study, with such heterogeneous groups even at best, there are large variations in sampling from the population even if one can be confident that it was the true population.

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* See the proportion indicated by later statistical analyses.

There are unknown, varying factors such as differences in definition of the disorder, in the professional origins and accuracy of diagnosis and classification, and variations in the degree of severity of the handicap identified and treated. Since this group of disorders is small, the average professional worker may see few unless he is a specialist or works in a special facility. The consequent lack of experience, and of shared experience, will lead to difficulties in the "calibration" of observations and assessments, and to the variations in precision and reliability of classification which are observed. There are parallels in other fields such as epidemiological and diagnostic studies of causes of mortality where "diagnostic imprecision" is a known and highly significant factor. (See Wynne, Griffith and Morgan (1962))

One of the implications of this fact is the need for interdisciplinary forms of screening and procedures by teams representing medical, psychological, educational, and linguistic disciplines, and for the development or adoption of effective measures of language disorder covering fair-sized populations, i.e. specialized diagnostic/resource centres. An adequate survey of prevalence of kinds and severity of language disorder at different age levels is urgently needed in the Province of Ontario.

9.11 The Differential Diagnosis of Aphasia: Difficulties and Effects on Treatment

To distinguish developmental language disorder from other handicaps is not as easy as might appear. There is, as noted, heterogeneity of handicap. This is amply confirmed by the date of the present study. (See the chapter on needs and characteristics of children.) Griffiths (1972) states, "There is some support for the view that the clinical picture of autism, receptive aphasia, and expressive aphasia may depend on the extent of the language handicap". Children with developmental language disorder are quite likely to be found in the mentally retarded group, among hearing handicapped, and within the learning disabilities group.

One of the tragedies of the language disordered child is the failure to diagnose his real disabilities and he is treated, for example, as a deaf child or as having only speech handicap. Children with other multiple handicaps, e.g. deaf-blind, may suffer from more or less specific language handicaps, as may children with neurological damage caused by accident or disease. When the gross factors of being unable to articulate and communicate found in the cerebral palsied group are remedied by supplying them with an alternative mode of communication, the real underlying language disorder emerges.

The difficulties of diagnosing aphasia effectively are brought out dramatically by a mother's account of her search for help with her aphasic son's problems (Browning (1972)).

Given the overlap, and the difficulties of differential diagnosis, between hearing handicap and developmental language disorder, there is a fair probability that children who have in addition language disorder will be found in facilities for the hearing-handicapped. The danger is that children who find considerable difficulty in responding to language as such may, if identified simply as hearing-handicapped, be educated through programs which provide a high degree of language stimulation through direct teaching and use of language. This is appropriate for many hearing-handicapped but can lead to confusion and frustration in the child who has severe language disorder, particularly of a receptive kind, and leads to loss of remedial time for the deficits in language. (See Kleffner's comments on the effects of language pressure on the language-handicapped child.)

Fenn (1976), discussing the remediation of language disorders among the mentally retarded, makes the point that an "enriched" language environment, or direct teaching of language inappropriate in structure to the child's needs, can pile up incomprehensibility and confusion for a child who begins by failing to comprehend.

The experience of Moor House School (U.K.), up to 1971 or later, was that a proportion of aphasic children with significant hearing handicap were eventually diagnosed correctly and placed in that school for the language-disordered, but only after long delays in which the child had been given intensive (and inappropriate) direct language treatment on the assumption that he was only hearing handicapped.

Experience in the Centre for Educational Disabilities, University of Guelph, suggests that some children with "learning disabilities" (developmental difficulties in reading, spelling, writing) have in fact a history of early language disorder which was not detected or treated, and they might better have been dealt with as language-disordered.

Ingram (1976) points out that little is known about the specific differences, if any, between the patterns of deviation in development and in mastery of linguistic structures in autistic, aphasic, mentally retarded and hearing-handicapped. The limited current research (discussed in Chapter 7) also illustrates the difficulty of establishing patterns of language deficit as compared with developmental delay in children with severe language difficulties.

9.12 The Difference Between Aphasia and Autism in Language Function

The present study examines both children with developmental language disorder and with early childhood autism. The distinction between aphasia and early childhood autism is clear, and the extreme groups are quite distinct. However, there is some overlap in behavior and in language functioning between these two diagnostic groups at early ages.

In comparing the language of aphasics and autistics, Wing (1966) pointed out that both share imperfect syntax and articulation, confusion of meanings of words, confusion of semantically related words, and reduction of words and sentences to syllables or words. DeHirsch (1967) found that high auditory thresholds for speech, inferior auditory discrimination, echolalia, limited output, distortion of feedback, and conceptual defects were shared by both aphasics and autistics, but aphasic language was said to be normal in intonation, pitch, and stress, whereas autistic language was not. Wing (1966) found that many children with receptive aphasia had in early childhood shown impairment of communication and social relationships similar to that of autistics. Rutter (1971) found a syndrome in which a group, otherwise indistinguishable from early childhood autistics, turned out to be receptive aphasics by 7 years of age. Wing (1976) finds the classic syndrome (autism) is easily differentiated from an equally classic developmental receptive speech disorder, but between these two lies a range of children with some of the elements of both syndromes.

The differences are as crucial as the similarities, however. Rutter, Bartak and Newman (1975) compared autistic and receptive aphasic children with an average I.Q. level of 89.* These were probably a majority of a highly-selected and well-diagnosed group of children who formed the population of residential special schools in South East England. Rutter et al (1971) found that delayed acquisition of speech, use of jargon, echolalia, new words and inconsistent response to sound were characteristic of both groups but echolalia and pronoun reversal were more common in the autistic, whereas aphasics had more use of gesture and of "inner language". Autistics had a greater comprehension deficit on the Reynell test of language. More aphasics had distinct hearing loss but many fewer showed echolalia. There was better understanding of verbal codes by aphasics, who had a much better capacity for symbolic play and use of nonverbal representations such as toys and models. By contrast, few autistics gestured spontaneously to communicate, or could imitate gestures, as compared with aphasic children who readily resorted to gesture. In other words, the difference between the groups was the capacity of the aphasic children to use the representational-symbolic behavior which preceded and probably underlies language. A fuller discussion is given in the chapter on early childhood autism.

The deficiencies of the aphasic group were specifically in the linguistic system. On the other hand, Morehead and Ingram (1976) suggest that there is some deficit of symbolizing in the language-disordered they studied, and Inhelder (1976) stresses this. The aphasic child has some capacity to play, imagine, symbolize, and use gesture. On these symbolic codes, he can build language. (See Reynell (1969)). He appears to have "inner language" (Griffiths (1972)), though this is non-verbal; it can be demonstrated that children taught sign language internalize this and, in a transition phase, "think" by using the aid of abbreviated motor signs. This kind of development would be expected, from Piaget's theories about the fundamental contribution of action to mental operation and the importance of play and imitative gesture in creating the child's symbolic process.

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* See the similar but lower I.Q. level in present study.

This symbolic capacity creates options for using alternative forms of language systems such as systematic sign language or ideographic symbols such as the Bliss Symbol system. (See Bellugi and O'Rourke (1972) on the development and value of sign language.) The aphasic child is in a much better position in this regard than is the autistic. Sign language can be used effectively as the preliminary stage of communication, leading to a transition to speech through structured visual cues and reading and "remedial syntax", as in the John Horniman School for young aphasic children, England.

A recent comparative study of language in autistic and aphasic children was carried out by Baker et al (1975). There were 19 autistic and 23 language-disordered (aphasic) children. The mean age of the autistic children was 7 years and of the aphasic children 8.2 years. A functional and linguistic analysis was made of utterances based on an hour's interaction between mother and child (Howlin et al (1973)). One to two years after the first evaluation, 13 children in each group were re-evaluated. In the initial evaluation, similar performance scores were found on test scores, rates of language acquisition, acquisition of words and comprehension of speech and gestures. The use of language was different for the two groups; the autistic group used fewer spontaneous utterances and more echoed and stereotyped remarks. The two most common categories of language use for both groups were answers and spontaneous remarks, which raises questions about Bartak's (1972) previous conclusion that spontaneous language was the distinguishing feature of the aphasic group. There were also a relatively high number of repetitions in aphasic speech, so that the generalization that autistic language has more echoes and repetitions than aphasic is too simple. The only significant difference between the two groups was in delayed echoes and thinking aloud, in which the autistic group had the more frequent response.

TABLE I

Utterance Types	Mean Per Cent of Utterances	
	Autistic	Aphasic
Immediate repetition of self	8.0	3.8
Immediate repetition of other	7.9	10.9
Delayed echoes	5.2	.1
Action accompaniment and thinking aloud	6.3	.2
Metaphorical language	1.0	.2
Questions	2.6	6.2
Answers	34.7	24.5
Spontaneous remarks	20.17	45.2
Directions, demands	2.5	3.1
Automatic language	7.1	3.3

In imitative behavior, the aphasic showed more of appropriate repetitions of self and of appropriate repetitions of others and also tended to do more expanded echoing. Autistics produced more inappropriate delayed reactions and tended to give more imitative language in general and inappropriate repeating of self.

TABLE II

AUTISTIC AND APHASIC ECHOES AND IMITATIONS

Types	Mean Per Cent of Utterances	
	Autistic	Aphasic
Immediate repetition of self, approp.	.8	1.8
Immediate repetition of self, inapprop.	4.8	.8
Repetitions of others, appropriate	2.2	6.7
Repetitions of others, inappropriate	1.2	1.6
Repetitions of others, exact	4.5	7.5
Repetitions of others, reduced	3.8	2.1
Repetitions of others, expanded	.4	1.3
Repetitions of others, mitigated	8.5	.0
Delayed echo	2.5	.1
Delayed echo, inappropriate	2.8	.0

9.13 Congenital and Neurological Factors and Handicaps

Children with developmental language disorders/aphasia usually fail to acquire speech at the normal age; a numbèr may acquire language at the normal age but lose it as the result of accident or disease or unknown factors. There is some evidence that early loss of language may be related to episodes of high fever, encephalitis, or severe convulsion in late infancy. Landau and Kleffner (1957) discuss six such cases.

In one major residential school in England (Moor House) a majority of the aphasic population is reported to have had febrile and convulsive episodes in childhood, followed by loss or severe deterioration of language. In another school, John Horniman (U.K.), a high proportion of children of 6 to 9 years of age with severe aphasia have records suggesting neurological malfunction.

Osgood and Miron (1964) attempted to differentiate between "congenital" aphasia and "childhood" aphasia due to early loss of language through disease or accident, but there does not appear to be much practical importance in this distinction when dealing with delay or loss of function in young children when language is emerging. The fact that there is a neurological basis for aphasia does not affect the planning of the language program. (See Kleffner (1973)) However, it may alert the teacher to the additional complications of behavior and attention, perception and memory. Hence the need for comprehensive diagnosis, by an interdisciplinary team, and review of the early developmental history of the child.

Aphasic children are likely to have a variety of additional disabilities, especially the receptive aphasic. These include:

1) difficulties in sensori-motor discrimination and integration, i.e. linking perception and motor response;
2) poor body image, laterality or orientation in space;
3) figure-ground confusion in tasks requiring discrimination of geometrical figures, and difficulties with other visual-spatial tasks. A review of perceptuo-motor performance carried out in the Belleville School for the Deaf confirms that the aphasic group have the most marked perceptual difficulties.

These are the signs often associated with a degree of brain damage or "minimal brain dysfunction". Such children may be "field-dependent" in Witkin's sense (1962) i.e. unduly under the control of environmental stimuli. They may be impulsive and distractible, with difficulties of attention and ability to select stimuli or to switch focus from one situation to another. There are indications of this kind of disability in the aphasic group in the Belleville school program.

Emotional difficulties can complicate the child's behavior and learning. Unable to communicate, experiencing the associated failures in making relationships and in learning normally is a most frustrating beginning to life (see Kleffner (1973)), leading to persistent emotional difficulties in the young child. It is not surprising that schools dealing with aphasic children report a range of emotional difficulties -- immaturity, temper tantrums, etc. These children, when very young, may be overly dependent and demanding, having adapted to their relationship within the family as dependent, handicapped children. Some of these immature or disturbed responses may, in turn, be related to an underlying neurological handicap (Griffiths (1972)). In schools for the language-disordered, such as John Horniman (U.K.), and in programs such as that of Reynell for young language-delayed children, there is a stage in which the child is taught to be less distractible and to develop more effective strategies of attention. This is essential if there is to be adequate communication between child and teacher/therapist.

9.14 Early Language Learning and Developmental Language Disorder

Normal children discriminate auditory stimuli in the first months of life (Eisenberg (1969)). Morse has shown that there may be discrimination of syllables early in development. Eimas (1974) claims that there is discrimination of speech sounds varying by only one phoneme, e.g. "Ba" versus "Ga",in the first months as shown by heart-rate response to habituation of the sounds, but it is still a subject of debate (Schiefelbusch and Lloyd (1974)) whether this is a merely acoustic response or a true language response. Ingram (1976) reviews the functioning of babbling in infancy which is a subject of debate, and concludes that it is more than simply motor practice; by nine months or before, the child has already selected a range of phonetic patterns similar to that of the parent's speech community. Crystal (1972) also notes this and describes intonation patterns which communicate information as well established by nine months.

Children with developmental disorders of language are delayed in these functions. Expressive aphasics may not babble until the second or third year of life. First words may not appear until age 4 or later and syntactic patterns not until age 6, though understanding for speech appears normal for everyday purposes (Griffiths (1972)). This limited vocalization may be accompanied by difficulties in articulation, as described previously. Language, when produced, may be telegraphic, recapitulating the stages through which normal children pass in acquiring syntax.

Receptive aphasic children whose automatic and imitative speech is correct may, when developing meaningful language, make the same errors as in normal development and pass through the same stages. (Carrow (1972)) Griffiths (1972) found that language-impaired children who scored significantly below the norm on comprehension and production of language at age 3 improved to a normal level of comprehension by age 6, but remained retarded in expression.

9.15 Outcomes in School and Vocational Placement

The rare pure-receptive aphasic has a poor prognosis for developing adequate language and has, as noted, other handicaps such as hearing loss. The introduction of sign language and alternative systems of communicating, including structured language depending on external cues (e.g. Lea (1970), Conn (1972)) have been of considerable value in their education.

The expressive aphasic has a better prognosis. Language may be acquired, apparently spontaneously, at a considerably delayed age -- 4 to 6 years.

A follow-up study by Griffiths (1969) of 49 students from one special school for aphasics showed that a third had returned to regular school by age 9 after special residential treatment which had lasted up to three years. The speech of this group had progressed satisfactorily but was not necessarily at normal level by any means. Nevertheless, two-thirds had not made this progress. The same school now aims to bring children into a remedial program much earlier, at the pre-school level. Its goals now are to prepare its students to communicate effectively (by organized sign) and on this foundation build up basic language structures and essential vocabulary in order to pass these children at age 9 to a senior school where the fuller development of language can take place.

It is known (Griffiths and others) that aphasic children are, like the hearing-handicapped, severely retarded in educational attainments. An old survey by McGinnis, Kleffner and Goldstein (1965) showed that of 141 children in the school at the Central Institute for the Deaf in St. Louis, 115 were promoted to other schools. Of these 76 were assessed fully and had a grade average of 3.6; i.e. a mean of 2½ years retardation in basic attainments. This compares with the limited data on reading attainment in the present study. No details were given of base-level on entry to school or linguistic functioning.

Aphasic children may have persistent difficulties, not only in school attainment but in vocational adjustment. There appears to be little organized information on this. Moor House School (U.K.) recently conducted a follow-up of a group of ex-students who had had severe aphasic or articulatory difficulties. They had made a variety of adjustments to social and vocational requirements but were not operating at the vocational level appropriate to their general ability. Their language competence, which was minimal, had shown little improvement since they left school. It was considered that this survey showed the need for more effective follow-up guidance and support for this group. There are no such follow-up data for schools or units treating language-handicapped children in Ontario.

9.16 Programs for Children with Developmental Language Disorder

The principles of programming are discussed later. There may be as many programs for children with developmental disorder as there are kinds of children, and these programs may well apply to other groups such as autistic or mentally retarded. Classical approaches are those described by Eisenson (1972), McGinnis (1963) and DuBard (1976). The first describes as suitable for children without language, the building up of discrimination of speech (phonemic) patterns and contrasts re single sounds, leading systematically to more complex units of language. The second, or "Association Method", also begins with imitating and producing sound and syllable patterns, but these are linked from the beginning with the printed word. All written variants are drilled exhaustively. As words are built up out of sub-units and the phonic patterns associated with print, the child eventually moves to reading, responding to and producing simple stories. There is emphasis on reinforcement of auditory memory through reproduction of the patterns being learned.

There are many modern approaches to language remediation, such as Gray and Fygetakis (1961) structured programming of syntactic structures based partly on a developmental sequence suggested by language acquisition stages, but mainly on task-analysis of the skills pre-requisite for moving from one stage of learning to the next. Lee, (1975) on the basis of her analysis of syntax, has described an approach essentially structured syntactically but using story/narrative forms to motivate language learning in young children. Bloom and Lahey (1976) have proposed an alternative "activity" method. A considerable variety of language programs has been devised for the mentally retarded, (see Fristoe's catalogue of all programs available in the U.S.A.) and these seem suitable for application to all language-disordered groups. These range from approaches emphasizing developmental criteria for entry to the program (e.g. Miller and Yoder) and in decisions on content and sequence of material, to approaches relying on task-analysis behavior management or operant conditioning. (Sailor, Guess and Baer (1974); Lovaas (1977))

The emphasis in these approaches is on developing graded forms of learning of real language response through imitation, modelling, and expansion rather than reinforcing speech elements such as phonemes or syllables and building these up. The rationale and technology for the modern approach is set out in Marshall and Hegrenes, and in Kent, Klein, Falk and Guenther (both in McLean Yoder and Schiefelbusch (1972)). Miller and Yoder describe the development of a syntax teaching program.

The present study reviews the variety of approaches and programs for all communication-disordered groups currently in use in Ontario. An eclectic educational approach without specific commitment to any one syntactic or classical method is employed in Bedford Park School, Toronto. The Association Method in a revised teaching format (DuBard (1976)) has been successfully adopted for aphasic children in the School for Hearing Handicapped, Belleville. Elsewhere in the province, aphasics may form part of groups of children with severe language disorder or delay and are taught by a variety of approaches in their classes or by individual therapists. The Southshore School, Sudbury, for example, uses a variety of materials and programs including the Lee method.

One of the most interesting developments has been the willingness of those making new approaches to begin with and make use of pre-verbal stages of behavior, or to employ alternative modes of communication to stimulate language. In the John Horniman School (U.K.) the approach is to use a systematic sign language for all aphasic children in order to establish a means of communication. This is used in turn to communicate the meanings of pictures, and words relating to objects and pictures. A finely graded minimum vocabulary and system of linguistic structures is introduced. At this point, colour and position cues are used with pictures and print material to enable the child to build up his syntactic structures from the outside (Lea (1970); Conn (1972); Hutt (1976)). Emphasis is placed on structured and graded teaching of structures, following the sequence of developmental syntax in general, as contrasted with unrestricted language experience based on interest and conceptual grounds which is believed to be too confusing unless the child has established a foundation of grammar and vocabulary. (See also Fenn (1976) and Kleffner on the need for structured teaching in any form of communication.

There is thus a wide range, at present, from "part" methods to "whole" methods, from developmental or structured to behavior modification, from phonics to real situational language.

As Evans (1971) comments, in relation to autistics, a great deal depends on whether the child can already comprehend language, is vocalizing or has a minimum repertoire of speech sounds or words. If there is a base of language to work on, the progress of remediation is likely to be swifter and more effective.

The planning of remedial approaches and of programs requires, in the experience of Griffiths (1972) close co-operation between disciplines, especially between speech pathologists and teachers, not in separate therapy and teaching, but in reinforcement of one another's work at both diagnostic and program level. The trend in Britain is towards the adoption of the model of the "clinical teacher" who is trained in both speech pathology and education (Schwartz (1971)). Speech pathologists and speech teachers are increasing their use of a variety of language programs, becoming practitioners of communications systems of every kind. In an exciting and expanding field of endeavour, the challenge is to develop the variety of means of communication to meet the varied needs of children with severe communication disorders.

10 Assessment of Language Disabilities

10.1 The Goals and Purposes of Evaluation and Assessment

The present study disclosed that a considerable variety of tests is used in Ontario to assess language disorder.* There appears to be no clear rationale or standardization of use; tests may be used for several different purposes. The variety of assessment is related to the variety of definitions and provision, therefore it seemed useful to summarize some information on current approaches to assessment of language disorder.

Assessment has a variety of goals, as discussed in "The Evaluation of Student Achievement", Ministry of Education, Ontario, and standard texts such as Cronbach (1970). The goals include:

a) screening and identification of handicap

b) placement and classification

c) the planning of remediation and choice of programs

d) evaluating progress in a program, or response to an educational environment

e) assessing when a student has completed the goals of a program.

These purposes are not likely to be fulfilled equally well by the same set of evaluation instruments or procedures. Procedures for screening and identifying children with handicaps meet administrative and possibly clinical needs, but are not necessarily of the greatest value for planning a child's entry into a program.

The questions asked by an assessment include these questions (Miller and Yoder (1972)):

1) What is the child's comprehension of language?

2) What is the child's production of language?

3) What gap is there between these aspects?

4) What is the gap between the child's language performance and a) that of children of his age/mental age, and
   b) the average level of adult language in the community?

5) What information does the assessment give for planning remediation?

One basic approach in assessment consists of determining the child's level of performance in relation to the norms of language performance, or developmental levels and stages in language. This involves comparison with others. A second, more useful approach, consists of describing and analyzing the child's current levels of performance and disabilities in relation to what the child needs to learn. (Kleffner (1973)) It is necessary to analyze language performance in terms of which items of learning come first and are pre-requisite to later learning, and relate the child's performance to this sequence. The sequence may be based on developmental information which describes the normal stages of acquisition of language, or on a behavioral analysis of what language skills are necessary for particular purposes and the order in which they may be most efficiently learned.

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* See later statistical analyses.

The value of an assessment which produces information on what linguistic structures a child possesses, how they are placed in a sequence of development, is that there can be a direct translation of this information into selecting or planning the appropriate program. (Crystal (1976))

10.2 The Need for Knowledge of Language

Language involves the relationship between linguistic and conceptual systems. It is more than simply teaching sounds, increasing the number of words known, or mastering linguistic structures. A classification of language should organize the basic processes of language, what happens when these are impaired, and what behaviors result.

There must be an adequate model of what language is plus definition of the goals of language learning, if assessment and programming are to be planned and on a rational basis.

Carrow (1972) provides a lucid and detailed account of what is involved in language assessment. She points out that the examiner needs to know about language development at the pre-linguistic as well as at the verbal levels; the examiner also needs to know about the language disorders and delays and their symptoms. Assessment should not merely provide a collection of facts, but be interpreted in terms of the child's language performance and related behaviors, leading as directly as possible to remediation.

Even within a group sharing common factors of language delay or disorder, there will be a variety of patterns of performance and disability. There are no groups for which specific tests are always applicable. For adequate diagnosis and planning of program, each child needs to be studied individually.

10.3 The Need for Flexible but Programmed "Clinical" Assessment

It is tempting to apply a standard battery of tests to each individual. For preliminary screening and identification, there is a case for adopting a standard technique for all children; screening may best be done when there is a need to check levels in quite specific functions (such as hearing loss) or to classify children in terms of general levels of disability.

Beyond that, the procedure must be flexible with variations to meet the needs of each individual. The approach should be programmed but clinical. That is, the examiner begins with hypotheses drawn from previous information such as screening tests, parent and teacher observations, and the child's history. He should select measures to test, confirm or deny the hypotheses. Each sequence of testing should be based on information from the stage before. This is the "iterative" approach, or sequential assessment. Simply accumulating a mass of scores and then attempting to interpret them is inefficient diagnosis, expensive in professional skills and in the time of both child and examiner.

Selecting adequate instruments is important, but even more important is observation and interpretation of the child's performance. The examiner is in part a technician, and must use the most efficient and reliable techniques, but is also a professional who makes judgements in the light of the incoming evidence on which further stimuli will elicit responses which throw light on the child's performance (See Kleffner (1973)). Clearly, this style of assessment can also take place in the classroom or therapy interview, as the teacher/therapist tries out and monitors particular sequences of program.

One message is clear: all professionals working in the field, including the teacher, must have an adequate knowledge of language development.

10.4 Tests as Samples of Language Behavior

There are further implications:

A variety of measures must be used in assessment, including direct observation of performance, comparison with developmental stages, use of check-lists, informal but controlled tests and formal testing.

Tests have advantages of being "objective" and economical in administration, having definite rules for administration and scoring which allows them to be used by a variety of examiners in a variety of situations. The interpretation of scores may be partly built into the description of the test, but essentially remains a professional judgement.

A test is a sample of behavior. It has built into it restrictions and interpretations of information, e.g. in the number and kinds of items measured, and the form in which they are assessed. It implicitly assumes a model of language behavior or psychological processing.

An example of differences in samples of language behavior, implying quite different models of language, is found in a comparison of the Illinois Test of Psycholinguistic Abilities (I.T.P.A.), Lee's North Western Syntax Test, and the Carrow test.

The I.T.P.A., in its Grammatical Closure sub-test, contains a number of items testing comprehension of prepositional usage in a variety of ways without a clear rationale. The North Western Syntax Test includes only prepositions of location. The Carrow test does not include prepositions in its content.

10.5 Reliability and Validity of Tests

A test has "reliability", which means consistency of response by a child from time to time; from one form of test to another; from one examiner to another dealing with the same child on the same occasion; or when similar forms of the test are compared. There are many other aspects to this characteristic of a test. (Cronbach (1970), Gulliksen (1953)) But in simple terms, a test must be consistent enough in use to discriminate between two groups or two individuals with a measurable and acceptable amount of error in misclassification.

Reliability is a basic requirement. Tests in common use may be too short, or have other faults which lead to rather low reliability. This can mean that they are efficient enough to distinguish differences between groups of children but may not make adequate and consistent distinctions between individuals unless score levels differ considerably.

The "validity" of a test is another complicated and thorny issue. Essentially, this is the degree to which the test predicts level of performance on some other measure of language or real-life performance. There is often little direct information on this aspect. Many language tests are essentially "criterion tests", i.e. they do not claim to predict or classify other forms of performance but are simply direct measures of mastery of the particular language structures or performances found in the test. Even so, there must be an assumption that the performances which are sampled by the test are specific, appropriate, and are related to some defensible description of developmental sequence in language. Tests may, in fact, have good face validity but measure little outside specific situations. The Berko test (1958), which uses nonsense words to elicit the child's ability to apply morphological rules, such as plural endings, has proved valuable in research but apparently has little relationship to real-life performance, as shown by analysis of language samples from children.

10.6 What Tests Tell the User: Cautions and Qualifications

Unless a test is based firmly on a criterion, i.e. simply tests mastery of its own content, its value turns on whether it has been standardized appropriately, or related to developmental norms of language acquisition so that the scores can be effectively interpreted and used to compare children with these norms.

The Wechsler Intelligence Scale for Children (Revised) is useful for establishing gross levels of language performance and providing comparisons between verbal and non-verbal abilities in children who have enough language to comprehend test instructions, but is by no means diagnostic for specific language handicaps, nor does it give the kind of information which enables specific programs to be planned.

There may be gross or subtle difficulties in tests.

The I.T.P.A., a standard test in psychological assessment and accepted by professionals as a means of screening language and abilities (such as those involved in auditory and visual memory, perception, etc.) certainly provides a useful estimate of general language level. Its subtest scores, however, are not related to any current theory or description of language and cannot be used to predict success on specific programs, or indicate where to begin in a program in specific terms, unless the program is set out in terms of the I.T.P.A. categories of performance. The A.C.L.C. test fails, in its later sequence, to take account of what has been discovered in children's acquisition of language, i.e. that elaboration of a noun takes place first on the object of a sentence and only later on the subject.

Siegel and Broen (1976) point out the need to review information from different perspectives. For example, the utterance, "I want two toy" may mean that the child a) does not understand the concept of two, b) does not know how to use the morpheme rule for plural, c) knows these things but cannot articulate plurals. They also emphasize the need for the examiner to know about language. In assessing errors in pronoun use, for example, it is relevant to know that it is not uncommon for a child to use only one case, e.g. "he, him", but it is less likely he will make a mistake in gender (him, her) and less likely still that he will make a mistake in person (I, you). Even the assessment of vocabulary is complex. Knowledge of a word involves knowing its phonological characteristic, syntactic function in a sentence, and specific range of meaning.

To interpret test scores, it is necessary to know their range of variation, i.e. how likely it is that a performance by a three year old overlaps with that of a five year old. Further, quality of response may be more relevant than quantity of score. For example, a few very distorted sounds may indicate a much more severe articulation problem than a greater number of less extreme errors.

10.7 An Analysis of What is Involved in Tests (Carrow)

Carrow (1972) stresses the need to review not only language performance but related behaviors in normal and impaired functioning, e.g. auditory and visual perception and memory. She suggests classification in terms of Process and Level. Process refers to receptive, associative, and expressive function. Within these processes are levels as follows:

Reception: Level I - sensory discrimination
Level II - perception
Level III - concept

Expression: Level I - speech sounds
Level II - automatic patterns
Level III - production of organized language

Carrow also analyzes the different "response" situations required by different tests and the different demands these may make on the child's abilities: e.g. -

accepting or rejecting a stimulus selected by the examiner;

sorting according to a model presented by the examiner;

matching;

selecting one item differing from a set;

arranging a series in order for size, pitch;

verbalizing a response to objects, pictures, words presented by the examiner.

Consideration of these factors enables the user to analyze what may be involved in the tests he employs. Carrow gives a systematic description and flow chart to which the reader is referred.

For example, at Level I, there would be located tests for defective hearing or deficient babble; at Level II, difficulties in perceiving sequence in objects or sounds (receptive) or imitating rote sentence patterns (expressive); at level III, difficulties in understanding organized speech (receptive) or generalizing the production of coherent language (productive).

She suggests starting with specific skills at the lower levels and moving to the more complex. In practical situations, however, it may be better to start with more comprehensive and high-level assessments of function, then break down the specific skills and impairments.

Among the classifications which arise are:

Tests of sensory response (to sounds)

Discrimination of perceptual qualities, e.g. Wepman

Perceptual closure, visual or auditory, e.g. Auditory or Grammatical Closure of the I.T.P.A.

Visual/Auditory Figure-Ground, e.g. I.T.P.A. and W.I.S.C. spatial or visual tests. There are no formal tests for auditory figure-ground, strangely enough, but the Developmental Learning Materials tapes and Goldman-Fristoe auditory discrimination (noisy condition) may provide this missing factor.

Perceptual skills and memory, e.g. copying visual figures, auditory memory in W.I.S.C. and I.T.P.A.

Tests of expressive process, Levels I and II, e.g. rhythm, articulation, assessment of child's feedback, whether he recognizes examiner's errors but not his own.

Tests of comprehension at Level III, e.g. vocabulary testing on Peabody Picture Vocabulary; auditory reception on I.T.P.A. which involves recognizing semantic equivalents in a sentence.

Tests of both comprehension and production in same instrument, North Western Syntax Test, Parsons Language Scale, Mecham, The Reynell Test (which has two sections, one on reception and one on expression).

Tests of language function such as the Berry-Talbot Test of generalizing morphological rules on nonsense material; the Tag Question Test (Bellugi-Klima); Stern's Parallel Sentence Production Test in which the child is asked to produce a sentence grammatically similar to the examiner's utterance, using a slightly different picture.

Tests of imitation which are notoriously a subject of debate since they assess memory and rote response but also reflect a child's processing of the sentence through his own grammatical system, hence comprehension and mastery of linguistic structures. One example is Stern's Echoic Response Inventory, with sentences graded in length and in complexity of transformations, and other language structures. Another useful but undefined set of "memory"/imitation tests are #6, 13 and 16 in the Detroit Tests of Learning Aptitude.

10.8 Characteristics of Available Tests

Miller and Yoder (1972) offer a classified catalogue of assessment instruments, covering most of the language instruments referred to by Carrow. Lloyd (1976) lists the most common language instruments which are accepted currently as useful, with detailed comments. The most comprehensive list is that published by the Central Institute for the Deaf, St. Louis, Missouri. Table 1, on page 95 , sets out a list, for the convenience of the reader. This is basically Miller and Yoder's catalogue, but with additions from Lloyd,as necessary, and from the present writer.

Siegel and Broen (1976) suggest a simple classification in terms of 1) articulation/phonology, 2) grammatical structures (syntax and morphology), 3) understanding of vocabulary and concepts-semantics, and 4) interpersonal uses of language. They point out, that though knowledge of syntax and grammatical forms is basic in language acquisition, the most important functions are understanding of meaning and relation of language to concepts. They would attach, therefore, much more weight to vocabulary and semantic aspects of language than is found in current testing which emphasizes mastery of syntactic structures, e.g. Lee's tests. An interesting part of Siegel and Brown's discussion is the description of assessment of interpersonal communication through arranging situations; e.g. Parson's Language Sample where the child is prompted to make requests or use the adult as a source of information, or experimental techniques in which children have to communicate to another person how to carry out a task such as selecting a particular object or pattern.

Present techniques of assessment are woefully weak in well-defined semantic tests. Tests of pragmatic language are practically non-existent though, as Bateman (1974) shows, the whole trend of development in research on language and in remediation is towards acknowledging the full complexity of practical discourse.

10.9 The Advantages of Taking Language Samples and Analyzing Them

What is missing in current assessment procedures is the use, for all individuals with any degree of expressive language, of language samples. There are difficulties in ensuring adequacy of sampling; time and skill are needed for adequate recording and analysis (e.g. over 4 hours), but these samples offer estimates of real language performance which are not given by tests. Analyzed by means of Lee's Developmental Sentence Scoring technique, or by Crystal's Language Assessment, Remediation and Screening Procedure, language samples give direct estimates of language performance; i.e. the mastery of linguistic structures related to developmental stages of language acquisition, or scoring of the relative complexity and relevance of language structures in terms of what is known of normal development.

10.10 The Importance of Knowledge of Normal Development

Crystal (1976) emphasizes the importance of relating the mastery of linguistic structures to the normal developmental sequences. He describes the advantages of an analysis of language performance as:

1) Generally applicable to both receptive and expressive performance, allowing comparison of normal and deviant function.

2) Having clinical realism, i.e. combining accuracy and comprehensiveness of assessment with reasonable speed and simplicity in use.

3) Grading of language structures in terms of their importance and sequence in normal development.

He refers to Rees' review of the possible ways of grading language structures in terms of the following: a) criterion such as complexity of transformation according to transformational grammar; b) the cognitive complexity of the structure in terms of the child's understanding and semantic development; c) perceptual difficulties in coding, sequencing, and memory in dealing with a particular language structure; d) length of mean utterance; e) the degree to which the structure is part of a major language community or a sub-dialect; f) comparison with what is known of normal stages of development.

Crystal argues strongly that the only sound basis for grading and remediation is the normal developmental stages of language acquisition. The present writer believes every professional concerned with language-disordered children must have a firm understanding of normal language development.

10.11 The Assessment of Play, Symbolism and Pre-linguistic Behaviors

For pre-linguistic assessment, or in dealing with children with marked receptive difficulties, there is a need to develop the techniques already described in major programs such as that of Kent (behavioral analysis), Bricker and Bricker (which begins with assessment of the child's symbolic behavior in Piagetian terms) or Yoder and Miller (analysis of how a child's experiences can be related to linguistic forms).

There is a need to adopt or standardize recent scales of play and pre-linguistic symbolic behavior.

Recently produced language programs, such as the ones referred to above, contain provisions for assessing important characteristics related to language, such as attention, motor imitation and vocal imitation. These are less "tests" than structured observation and trials of learning.

Developing techniques of this kind appears to be more important than adding to tests which may well not answer fully the questions posed by assessment. However, there is a case for reviewing the contribution of the range of tests in current use, selecting from these on grounds of their effectiveness, combining them into a battery and carrying out a comprehensive validation and standardization study. In this way, tests drawn from many different sources and with different populations could be put on a common base for survey and identification purposes, or as a pool from which the clinician might select with confidence.

10.12 The Evaluation of Student Progress and Placement

What is particularly weak at present is the assessment of student progress. Few available tests appear appropriate for this purpose. Assessment of progress is built effectively into a variety of programs; e.g. McGinnis, Kent, Bricker and Bricker, Yoder and Miller, Distar. They enable the teacher/therapist to estimate the acquisition of specific structures or response to a particular sequence of teaching. Where there is no inbuilt assessment, or effective external assessment, it is not easy to check whether children are moving through the program effectively, or meeting the goals set.

Response to materials used by teachers and therapists for remediation, such as the Developmental Learning Materials or Peabody materials, can be adapted to give assessment of progress; this depends, however, on an adequate analysis of what content and sequence of linguistic or conceptual structures is involved in these materials.

Another area of weakness is the evaluation of the criteria for terminating a program or judging when an individual child has reached the goals set sufficiently to reduce the gap between his initial level of learning and his needs.

10.13 Who Should Do the Evaluation?

Carrow (1972) comments that the speech pathologist, though the professional most obviously concerned with language assessment, cannot be expected to be expert in all aspects of the child's functioning. She emphasizes the need for the speech pathologist to integrate information from all areas applying to language.

Preferably, there should be a sharing of information and responsibilities, an interdisciplinary effort involving administrators, teachers, psychologists, etc. Ideally, an assessment and planning team should be able to call on a paediatrician, neurologist, psychologist, speech pathologist, audiologist, social worker, and the educational consultant. Kleffner (1973) points out the practical disadvantages of this. The teacher or therapist must be involved as soon as the assessment indicates the need for selecting and planning a program.

Siegel and Broen (1976) emphasize the need not to depend upon tests but to define language disorder sufficiently to involve parents, physicians, teachers, and others (such as public health workers and social workers) in the process of screening and identification. Reviewing the contribution of various techniques of screening, they conclude that screening procedures should be founded on developing effective and perceptive teacher referral at the school level.

10.14 Future Needs in Assessment

It bears repeating, that all concerned in assessment and remediation must know as much as possible about the normal stages of language acquisition and the crippling educational and emotional effects of language disorder. The reader is referred to Kleffner (1973) for a concise, insightful and practical discussion of the issues.

Remediation cannot take place prior to assessment. Assessment cannot take place prior to identification. Since the child with language disorder or delay is likely to have shown this handicap since the age of three, early identification is crucial. Data from the present study showed that children usually are assessed for their first placement by 5 or 6 years of age at the earliest. This means a loss of at least two vital years of remediation.

It is essential that the educational and health services, at local and provincial levels, co-operate if the handicapped child is to be identified and aided at the earliest possible period in his/her life.

A "kit" of screening instruments, such as a language checklist and simple language tests (see the Washington Scale, the Bzoch-League checklist) should be developed for use by the Public Health Services and other medical personnel who come into contact with pre-school children. Training of Public Health personnel should be carried out in the simple screening procedures similar to those developed many years ago for identifying the hearing-handicapped child at an early age. Such screening techniques might well be adapted for use by parents and classroom teachers.

10.15 Sources of Tests and Techniques of Language Assessment

1. A discussion of theoretical principles and practical issues, with reference to tests and techniques, is given by Carrow (1972), Chapter 4 in McLean, Yoder and Schiefelbusch, Language Intervention with the Retarded, University Park Press.

2. A description of techniques for assessing language structure, with a list of the tests most commonly used, is given by Yoder and Miller, Chapter 5 in McLean, Yoder and Schiefelbusch, Language Intervention with the Retarded, University Park Press.

3. The most complete annotated description of tests is given in Myerson, Fishman & Fowler (1976) Central Institute Test Evaluation Booklet: A Study by the Central Institute for the Deaf, Missouri, Go-Mo Industries Inc., Cedar Falls, Iowa 50613.

4. A selection of language tests is fully annotated in Cicciarelli, Broen and Siegel (1976), Language Assessment Procedures, Appendix A, Lloyd L. Communication Assessment and Intervention Strategies, University Park Press.

5. Tests and techniques are reviewed by Siegel and Broen (1976), with a full bibliography, in Chapter 3, Lloyd L. Communication Assessment and Intervention Strategies, University Park Press.

6. Assessment techniques and standard tests for "non-verbal children" are discussed by Eisenson (1972) Aphasia in Children, Chapter 5.

7. An excellent practical discussion of the principles of language assessment is given by Kleffner (1973) Language Disorders in Children, Bobbs-Merrill Co.

8. An outline discussion of general language assessment, including teachers' assessments, is given by Mittler (1976) in Berry, Language and Communication in the Mentally Handicapped, University Park Press.

9. Guidelines to the observation and analysis of language in autistics are given in Donnellan-Walsh, Gossage, LaVigna, Schuler and Traphagen: (1976) "Teaching Makes a Difference"; A Guide for Developing Successful Classes for Autistic and Other Severely Handicapped Children; Teachers Manual Santa Barbara Autism Dissemination Project, Santa Barbara County Schools, Ca., Office of the Superintendent.

10. Discussion of the assessment of the autistic child, including appendix on the Evaluation and Prescription for Exceptional Children checklist (EPEC) is found in Chapters 1 to 4 of Ritvo et al (1976) Autism: Diagnosis, Current Research and Management, Spectrum Publications Inc., New York.

11. Discussion of clinical educational assessment making use of detailed check lists is given in Wing L (1976) Early Childhood Autism, Pergamon (2nd Ed.)

12. Comprehensive discussion of the theoretical background and practical issues involved in the use of language samples for assessment of grammatical development is given in: Crystal et al (1976) The Grammatical Analysis of Language Disability, Edward Arnold, London; and Lee, L. et al (1974) Developmental Sentence Analysis: A Grammatical Assessment Procedure for Speech and Language Disorders, Northwestern University, Evanston, Ill.

13. A manuscript bibliography of references to language assessment with a section on language sampling techniques, was prepared by Fralick, P. as part of assignments for the M.A. (Family Studies, University of Guelph) under the supervision of G.A.V. Morgan; copies can be obtained from the Centre for Educational Disabilities, University of Guelph.

14. An advanced study of phonological assessment and remediation is to be found in Ingram (1976) The methodology of data collection is found in Chapter 4, Phonological Disability in Children, Edward Arnold, London.

SELECTED TESTS FOR ASSESSING THE STRUCTURE OF LANGUAGE

(Yoder and Miller 1972)

Language Structure	Tests
Phonology: speech sounds	Templin-Darley Screening and Diagnostic Tests of Articulation Goldman-Fristoe Articulation Test The Deep Test of Articulation (McDonald) Developmental Articulation Test (Hejna)
Morphology: word forms, tenses, plurality, possessive, comparative, pronoun changes, prefixes, suffixes	Test of English Morphology (Berko) Exploratory Test of Grammar (Berry-Talbot) Auditory Test for Language Comprehension (Carrow) North Western Syntax Screening Test (Lee) Evaluation of Grammatical Capacity (Menyuk) Grammatical Closure, I.T.P.A. Grammatical Comprehension Test (Bellugi-Klima) Analysis of spontaneous language samples
Syntax: word order, phrase structure, transformations	Grammatical Comprehension Test (Bellugi-Klima) Auditory Test for Language Comprehension (Carrow) North Western Syntax Screening Test (Lee) Evaluation of Grammatical Capacity (Menyuk) Analysis of spontaneous speech samples Selected items from Peabody Language Development Kits
Semantics: word meanings, vocabulary (choice, variety and number), concepts (classification, relational & logical)	Peabody Picture Vocabulary Test (Dunn) Full-Range Picture Vocabulary Test (Ammons and Ammons) Vocabulary; Similarities W.I.S.C. I.T.P.A. Subtests: Auditory Reception Visual Reception Verbal Expression Manual Expression Auditory-Vocal Association Visual-Motor Association The Basic Concept Inventory (Engelmann) Analysis of spontaneous language samples Selected items from Peabody Language Development Kits

Add:

Vocabulary/syntax: Receptive	Assessment of Children's Language Comprehension (Foster, Giddan & Stark)
Morphology/vocabulary/syntax: Receptive and Expressive	Developmental Language Scale (Reynell)

Morphology/Syntax:	Elicited Language Inventory (Carrow)
Comprehensive expressive/ receptive	Porch Index of Communicative Ability in Children (PICAC) (Porch)
Mixed language performance	Utah Test of Language Development (Mecham, Jex and Jones)
Vocabulary; expressive/ receptive language	Michigan Picture Language Inventory (Wolski & Lerea)
Spontaneous language performance	Houston Test for Language Development (Crabtree)
Sentence structure imitation	Echoic Response Inventory for Children (Stern) Parallel Sentence Production Test (Stern)
Question (grammatical structure)	Tag Question Test (Bellugi-Klima), Slobin 1967
Interview/observation scales of language (Checklists)	Verbal Language Development Scale (Mecham) Receptive-Expressive Emergent Language Scale (Bzoch and League) Washington Scale Communication Evaluation Chart (Anderson, Miles & Matheney) Denver Developmental Screening Test (Frankenburg, Dodds & Fanadal) Portage Guide

11 Programs

11.1 The Goals of a Remedial Language Program

Program is what is to be taught, why, and how.

The program must be adapted to the child's progress and not the child to the program. (Schiefelbusch (1974))

In any given group of language-disordered children, no two children have the same problems, the same needs.

What is required is a variety of programs to meet the varied needs of children. It is essential that these programs be based on rational considerations such as a sound theory of language and clearly defined objectives. As Kleffner (1973) says: "Language teaching must be clearly structured but relevant to the needs of the child".

Fristoe (1975) completed a national survey of language programs developed for the mentally retarded throughout the United States. He found 229 programs, and gathered detailed information on 187. Appendix D of Lloyd (1976) summarizes in detail those programs which are available in kit form. Although these programs were selected with the mentally retarded in view, many are applicable to the needs of children with developmental disability in language, or can be adapted for them. This report is recommended to the reader.

The workable goal of language programs is to acquire specific levels of competence in communication on which more complex linguistic skills can be built. Premack (1974) points out, that when basic distinctions have been established in the language system (whether in verbal language, sign or symbol) this skill can and should be developed to lead to new distinctions between objects, words, signs and symbols.

Ruder and Smith (1974) point out that there are two main stages to a language program (echoing Premack's distinction):

1) Establishing behavior leading to expression of linguistic patterns containing actor-action-object relations (sentences) and

2) Modifying these basic patterns by a) making them syntactically more complex; e.g. two to three to four word sentences, and b) teaching the child to perform operations on the basic actor-action-object pattern, either on complete sentences as in negation, question, or within the sentence; e.g. modifying and extending noun, verb, or other relationship.

The goals of program should vary according to the age of the child, his level of language acquisition, present level of performance, level of symbolic and of cognitive functioning, receptive or expressive difficulties, difficulties in articulation, syntactical structures, semantics, and many other factors.

There are, however, common principles:

1) The program should provide a system of communication which enables the child to function effectively in his environment.

2) When possible, it should relate to the child's experiences and environment.

3) It should facilitate further language acquisition.

4) The over-all goal should be spontaneous use of language which is effective for the child and contains more than just the specific patterns/skills developed during training.

The aim should be to reduce the difference between the skills the child has and the language requirements in the child's current environment.

11.2 Conditions Affecting Choice and Use of Program

The aims and nature of a program are affected by both theoretical and practical considerations.

1) If the language-delayed child is viewed as acquiring language by the same means but at a slower rate than normal, the goal of the program will be to follow the successive stages of the normal language learner. This gives rise to developmental or linguistically structured programs such as those of Reynell, Lee, or Miller and Yoder.

2) If the child is viewed as having failed to acquire normal language patterns, the stages of learning may follow a course which is quite different from the normal developmental sequence. Indeed, the content, sequence, or materials of the program may be quite different from those found in programs for the slow but normally developing learner. Examples are the McGinnis/DuBard program for aphasics and the Distar program.

Another contrast is between:

3) Programs which teach specific functional skills to meet immediate needs, or as the only level of language that can be acquired (often, but not necessarily, found in connection with an operant-conditioning instructional approach) and

4) Programs which not only help the child acquire language but set out to give him strategies for further language acquisition.

Programs differ in many important ways: content, sequence of items learned, medium of learning, and instructional approaches. Despite variations in choice of what is to be learned and in what sequence, there is, in modern programs, less disagreement concerning instructional strategies which all tend to draw on behavioral techniques such as cueing, reinforcement, and imitation.

11.3 The Claims of the Developmental Stage Approach

Several of the programs discussed, especially those for young and language-delayed children, are based on developmental/psycholinguistic principles. In the words of Miller and Yoder, programs should:

1) be based on realistic communication behavior;

2) be related to the educational and language environment of the child as well as to his developmental level;

3) be based on what is known of normal developmental stages of cognitive and psycho-linguistic growth;

4) take into account the kinds of interaction normally taking place between children and their environment; and

5) help children become active participants in relevant non-linguistic experience.

These authors, like Lee, base their program on the child's normal stages of linguistic development. The content and sequence of the program are selected by considering those linguistic structures which are a) most frequent at a given normal stage of development, and b) most important linguistically, and relating these to the child's present level of functioning.

Crystal (1976) also makes a strong case for making the normal developmental stages of linguistic learning the guide to assessment and to decision where to give and how to sequence teaching/therapy.

Schiefelbusch (1974) concludes, from a review of various programs, that there seems to be a consensus that language acquisition research has a prominent place in guiding intervention for the young and language-delayed. He further claims that the environmental stimuli which enable a child to acquire a language in the natural environment should be replicated in an intervening program (which is not accepted by all authorities; see Kleffner on the need for structure in teaching language).

Among the principles he puts forward are that early intervention in language should be based on what is known of the content and stages of language acquisition; should be based on the child's cognitive functions; and that language training is essentially a task of mapping symbolic functioning onto a formal language system involving phonology and syntax. It could also be mapping the child's symbolism onto an alternative formal language system of sign, or of concrete symbols.

11.4 The Need for Structure and Instructional Sequence in Teaching

But Ruder and Smith (1974) claim that there is not sufficient data on developmental progression in normal language to allow one to determine in detail whether or not a particular set of linguistic behaviors is a necessary or sufficient pre-requisite to other linguistic behaviors which are to be taught. In their view, the sequence in which specific linguistic structures are to be taught is a matter for experiment and task analysis.

Behaviorists, such as Baer (1974), also criticize reliance on assumptions about language development for the same reason. There is a) insufficiently detailed knowledge about sequences and prerequisites in acquiring language, and b) even if a child is not ready (i.e. does not possess a particular language skill) the program should lead him step by step to this mastery. Language teaching is based on careful grading and precise management of stimuli and reinforcement, not simply accepting a developmental level as guide. c) A fundamental criticism, which goes to the heart of the yet-unresolved issue of the difference between language delay and language disorder in children, is that older children who are retarded or handicapped may have quite different needs from those of young children.

Kent (1974) presents a systematic functional approach to language for the mentally retarded based on behavioral principles and task analysis. She presents sequences of learning that strongly resemble those described by Bricker and Bricker. The program seems applicable to many language-deviant groups and the stages now are found as part of many systematic programs of remediation.

Because "a deviant population by definition demonstrates the inappropriateness of applying a normal developmental sequence to the group", (Guess, Sailor and Baer (1974)) content and sequence of learning are a matter for empirical task-analysis.

11.5 The Fundamental Dimensions of Program: Content and Sequence

The important factors in a program are the choice of content, of sequence, and of instructional procedure -- the "what" and "how" of programming. Developmental/linguistic programs emphasize the importance of content and sequence. Behavioral and, in particular, operant-conditioning programs emphasize instructional technology. Effective programs should define both clearly. Some of the confusions in distinguishing different programs may be due to failure to identify the contribution of these two aspects.

11.5.1 Content

Content is always linguistic, in some sense of "language" but relates to what is to be learned, or the base on which language learning is to take place. Content may be conceptual, i.e. important concepts and experiences are selected in order to map these into linguistic forms (e.g. situations which exploit manipulation of objects, events, and relationships in the child's experience). Concepts may be those which emerge from natural developmental sequences, or are deliberately selected for teaching.

Content may be semantic, i.e. based on selection of important relationships in the child's experience which are coded into language (e.g. action, location, cause-effect, actor-object, basic categories of meaning).

Content may be syntactic, i.e. based on sequence of important linguistic structures: mastery of word-order and relationships; production of sentence patterns; use of subject/verb/object; mastering transformations such as tenses, questions, pronoun relationships, etc.

Content may be phonological, i.e. stress the discrimination of speech sounds or articulation.

Content may be more narrowly based, for example on (1) extending vocabulary or (2) establishing specific and limited socially useful language skills. Or it may be composed of a mixture of abilities and kinds of language, as in the Peabody materials.

11.5.2 Structure

The concept of content is related to that of structure. Clearly, the more precisely the content is defined, the more obvious is the structure of the program.

If a program is built on what is known of normal linguistic development in the child, or on selection of a sequence of structures which are important or difficult for these children (e.g. Lee (1974)), then the content of the program will conform closely to the succession of semantic and/or syntactic structures.

The content may be deliberately selected and arranged on other grounds, i.e. task-analysis of what is involved in language learning and the prerequisites of learning one item or skill as basis for another. Whatever the emphasis in any one program, it would be difficult to ignore the need to deal with phonological (articulation) skills, semantic understanding, and syntactic mastery as interrelated.

Choice and variety of content and arrangement within programs are obviously related to assumptions about the nature of language and learning, and reflect the goals set for teaching the child.

For example, the Bricker and Bricker, and Miller and Yoder, programs incorporate pre-verbal manipulation of objects and symbolizing, conceptual content, a stress on semantic aspects (meaning and significance for the child) and syntactic structures. The Bricker and Bricker program clearly specifies the stages of progress from imitation to comprehension to the syntax level.

The Lee story-comprehension program has a strong semantic emphasis i.e. meanings and significance in terms of the child's level of development, and bases itself on a developmental analysis of language. It also incorporates specific linguistic (syntactic) structures to be learned and reinforced. The North Western University pre-school research programs have a conceptual, semantic and syntactic emphasis, i.e. using the child's own experiences but relating these to language structures; they also incorporate practice and reinforcement in articulation into this program by selecting sounds to be used in the language material.

By contrast, programs as described by Gray and Fygetakis (1961) define a specific, highly structured and programmed sequence of acquiring syntactic structures.

11.5.3 Sequence

Sequence describes the order in which material is arranged and learning is to take place. Evidence suggests that the acquisition of a given language structure is facilitated by a prior level of development. Sequence refers to the choice of the order of skills, of developmental levels of language, of language prerequisites.

11.6 The Developmental vs. the Behavioral (Task Analysis) Sequence

One approach to deciding on sequence is developmental. That is, the normal stages of acquiring concepts, or meanings, or linguistic structures are taken as the guide for the teaching sequence. Miller and Yoder specifically make this choice. They select items for learning in terms of (1) their frequency in the normal developmental sequence and, within this, (2) for their apparent importance as prerequisites for the next stage of mastery.

Crystal (1976) also emphasizes that the normal sequence of acquisition of linguistic structures is the most reliable and unambiguous guide available, in the absence of further information. Lee (1975) uses knowledge of developmental sequence as a guide, but selects particular linguistic structures for emphasis on the basis of how important or how difficult they are for children with language delay.

The alternative approach, proposed by those who favour a behavioral, task-analysis approach, is to query the value of a developmental approach for two reasons. (1) That it does not supply the detailed, specific information which allows one to predict that learning one linguistic structure is the best foundation for another. (2) That the normal developmental stages may be inappropriate when considering children who are, by definition, deviant in language development. (3) They may require compensatory help or special techniques rather than remediation of delayed but normal patterns.

Ruder and Smith (1974) illustrate the kind of empirical work which they believe is needed to establish the correct sequence of prerequisite behaviors, i.e. what should be taught at a given stage in order to establish the most effective foundation for a related skill or the next sequence.

Baer (1974) points out that those who develop and those who use programs need more accurate and useful descriptions of language behavior, and to know what sequence of prerequisites (stated in specific linguistic or behavioral terms) will lead most efficiently to learning. This implies that there should be not only continued study of how children acquire varieties of language and linguistic structures in a range of normal environments, but detailed monitoring (for individuals as well as groups) of the empirical effectiveness of sequencing in a variety of programs.

11.7 Structure as a Concept in Remedial Language Programs

The concept of *structure* is closely related to that of content and sequence. The more precisely-defined goals are, the more explicit the sequence of prerequisite stages of learning, the more highly structured a program is likely to be.

A program such as that of Gray and Fygetakis (1961) has a high degree of structure, since its content and sequence follow very carefully defined and graded ordering of linguistic structures. In Lee's (1975) story-conversation program, the structure is not so specific, restrictive, or pre-set; nevertheless, the selection and arrangement of linguistic structures are built carefully into the experience presented to the child.

At one extreme is the program which is apparently unplanned, except that it follows the day by day development, needs, and experience of the learner (the extreme of what is sometimes viewed as the "open" or developmental approach). At the other extreme is the prescriptive plan for presenting situations to be taught and structures to be mastered and drilled with little variation, e.g.Distar.

Normal developmental sequences, normal environments for stimulation, can be built into programs without forfeiting structure, as in those of Miller and Yoder (1974).

To be effective, all language programs must have some structure -- goals, content, sequence in presentation. They can offer alternative sequences or materials, be flexible to individual children or circumstances, but they cannot be simply an assembly of varied skills and bits of language. If they are without some clear pattern of selection and sequence of materials, remediation is unlikely to have an effective or rational basis. Some of the Peabody materials may well fall under these strictures.

11.8 The Varied Meanings of a "Developmental" Approach

Since the term "*developmental*" is often contrasted in meaning with "*structured*" or "*programmed*" or "*behavioral*", it may be useful briefly to consider what "developmental" may mean. It means:

1) The use of information about the normal stages of the development of language acquisition to guide choice of content and sequence in language teaching. The value of this approach is defended by Crystal (1976), Miller and Yoder (1974), Lee (1974), Schiefelbusch (1974) and others. This could relate to decisions on the point at which the child enters the program, or on the sequence of teaching, or both.

2) The related but independent use (of the term "developmental") to describe an approach which stresses the importance of investigating and making use of the child's conceptual levels, or relating language to pre-verbal classificatory and symbolic processes.

3) A semantic base for program could also be held to be "developmental" because selection of semantic content requires examination of the semantic categories developed by young children to fit their needs.

4) Another different, independent, but connected definition of "developmental" is in the assumption that the learning situation should reproduce, as far as possible, the assumed normal sequence of events; that the environment (material and human) should be exploited for its natural patterns of stimulation and discrimination of concept, meaning, and language. This is a stance favoured by Miller and Yoder, and endorsed by Schiefelbusch for work with young children with language delay. The Reynell and Chedoke programs, and also Lee, take this approach, in part, for creating meaningful learning situations. To adopt this stance, however, is not to claim that the learning environment must be exactly as it would be for normal children; there must be some degree of focus and structure. (Kleffner)

11.9 Language and the Pre-linguistic and Cognitive Levels of the Child

Increasingly the process of language acquisition is perceived as being related intimately to the cognitive development of the child, i.e. his functional use of objects, organization of experiences, and symbolizing. This is an important aspect of several programs for young or severely retarded children, e.g. Bricker and Bricker (1974), Miller and Yoder (1974), or autistic children (Los Angeles County Program (1977)).

This is not to deny the importance of acquiring and teaching grammatical structures (syntax) or articulation. Acquisition of the appropriate linguistic structures is crucial in language remediation. But adequate syntax is only one element of language, and even more important is the acquisition and communication of meaning. (Santa Barbara Autism Research Project (1976))

There is a need to take account of extra-linguistic factors, especially in young or retarded children, or those with disorders contributing to their failure to acquire language. These factors include ability to listen, memory sufficient to deal with the length and complexity of the stimuli encountered, readiness to respond.

Several programs for young children and for retarded children build in a pre-linguistic stage, to take account of cognitive functioning and semantic development. In order to operate, most also take account of the extra-linguistic "management" needed to prepare, or control, and focus the child's behavior.

For example, Bricker and Bricker (1974) present a detailed and comprehensive program intended to take the child from little or no language to simple sentence production. They begin with a prelinguistic symbolic level. The child is carefully assessed, in terms of Piagetian stages and tasks, for his ability to remember objects, manipulate them in real-life settings, and his symbolizing through use of objects, gestures, etc. This establishes a repertoire leading to the following sequence of learning. They consider the environmental conditions, including the behavior of the parents, sibs, and peers, experiences with objects and events, and the kinds of situation which characterize normal language development.

The outline of their progression is: 1) establishing the child's repertoire, 2) discrimination, 3) imitation, 4) comprehension, 5) production, and 6) syntax program.

In detail, this covers:

Motor imitation, gesture, pointing, etc.

Functional use and classification of everyday objects.

Two-choice discrimination learning of objects.

Matching similar objects, objects to pictures, pictures to pictures, etc.

Rote receptive vocabulary (imitation, repetition)

Conceptual receptive vocabulary (discrimination, labelling objects).

The process is repeated for production: stimulating vocal response; imitation of speech sounds and word imitations. Finally, in the syntax program, there is a graded progression through imitative object-naming, imitative picture-naming, spontaneous production of names of objects (nouns); spontaneous production of actions (verbs); development of receptive patterns which link object to action, or actor and action, then actor-action-object and the production of simple sentences.

It is to be noted that this program reconciles cognitive/developmental approaches, reliance on stages of linguistic development and on systematic teaching (e.g. imitation, reinforcement, modelling of response for or by the child).

Miller and Yoder (1974) and the Nisonger Program, Horstmeier & MacDonald (1975) suggest using the current conceptual and symbolic functioning of the child as a guide to where to begin and what verbal, or non-verbal, behaviors to teach: e.g. How does the child perceive, classify, symbolize and/or respond to his experiences? What functions of familiar objects does the child respond to? What concepts does he display in classifying and putting things in order? What communication behavior does he display with familiar adults and peers?

11.10 Comprehension, Imitation and Production: Receptive vs. Expressive

Early work in children's language suggested that comprehension is easier than imitation, and imitation easier than spontaneous production of language. This is generally accepted still, but Bloom (1973), in a sensitive analysis, shows that the assumption is not always borne out, and that the relationship between comprehension (reception) and production (expression) varies with the learning situation and the task. Guess, Sailor and Baer (1974) confirm this from their experiments.

A child may have specific receptive difficulties and the program may have to limit its goals to establishing receptive mastery. Most comprehension language programs proceed from assessing and using receptive language (or, in cases of extreme handicap, developing receptive responses) to establishing expressive language. See Bricker and Bricker (1974), Miller and Yoder (1974) and Kent (1974).

Schiefelbusch gives as one of his five principles of language intervention that receptive language training should precede acquisition of expressive language. Kleffner (1973) confirms this from extensive clinical/educational experience.

Programs such as that described by Winitz (1969) do not train expressive language at all, but claim that effective stimulation and mastery of receptive language alone can lead to acquisition of expressive language. This may be through a process of spontaneous recall and rehearsal by the learner as he listens to and comprehends language. There are parallels with normal language acquisition (i.e. the long period of time in which the child codes language receptively before he utters a word) and with some experiences in second language learning. This technique may have some value for children with marked difficulties of expressive language.

Studies of the findings and techniques in the field of second language learning and bilingualism may have some value for remedial programs in language.

11.11 A Model of Language Instruction

Kleffner (1973) proposes a model of language instruction in five steps and presents certain principles of language instruction, as follows:

1. Analytic attention should be given to the details of language content, teaching interactions, and instructional procedures when working with children who have language disorders.

2. Language instruction for children who have failed to develop language normally needs to be largely deductive and explicit.

3. Intermodality relations need to be developed systematically and explicitly, i.e. between expression and reception, written and oral forms.

4. Systematic opportunities must be provided for speech performance with all language material taught, i.e. to extend and apply language.

5. Rote practice in speech production may prove helpful in establishing increased accuracy and fluency in verbal performance.

6. Language learning activities must include opportunities for natural conversational interactions concurrent with all instructional sequences.

7. Insofar as possible, the language being taught should be experience-related.

8. Successful language teaching requires that the instructor lead the child into communicative interactions in which wrong responses are virtually impossible.

9. Language instruction must include and involve the parents as partners in the enterprise.

11.12 Transfer and Generalization of Language Outside School

Many programs emphasize the need to ensure the transfer of language skills to real-life contexts. Within institutional and residential settings, it will be necessary to gain the co-operation of many others besides the therapists or teachers who work with the children. It is necessary to train such persons to stimulate and reinforce children's language experience. Bricker and Bricker (1974) describe such an arrangement in which language structures are "naturally" exploited and reinforced in the day to day setting of a residence for young mentally-retarded children. One major difficulty is the gap that can occur between the school and the outside setting. This is particularly marked if there is a need to acquire an additional language system such as signing or other symbolism.

The same difficulty exists, to a lesser extent, in the relationship between school and home. One of the criteria of a good program is that it should be applicable in the home as well as in the therapeutic situation. Kleffner (1973) stresses the importance of parent education, giving the parents education in language and techniques appropriate to reinforce the language learning that is taking place. The Santa Barbara Autism Dissemination Project sets out techniques for parent guidance and education.

Horton (1974) describes a home-teaching program for parents of very young deaf children. She employed "Rules of Talking" for parents: (1) non-verbal; (2) verbal reinforcement of verbal behavior in the real environment; (3) using language relevant to the immediate situation, interest, and experience of the child; (4) using redundancy (repetition, expansion) in giving lexical, syntactic, and semantic input to the child; (5) giving feedback and confirmation of correct response; (6) expansion of these; (7) appropriate use of intonation and stress.

Normal parents adapt their level, speed and emphasis to the needs of children who are acquiring language. (See Brown and Bellugi (1965); Broen (1972)) Wachs, Uzgiris and Hunt (1971) found that parental vocalizing, naming objects, and playing games involving language were correlated with the development of infant vocal behavior, and the child's use of language to anticipate and plan. Presumably, the same principles hold when adapted to the needs of language-delayed children.

On the other hand, young language-disordered children with poor receptive skills, or poor auditory memory, may become overwhelmed by too much verbal stimulation, by the occurrence of a high level of distracting sound (as in public places) or may react to the frustration of poor communication. (Kleffner (1973)) They also respond badly to "language pressure" from those around them. For them, simple stimulation and repetition may not be the answer. This stresses the need for parent education and counselling.

Related to the issue of generalizing and extending language by using it in the real environment is the possibility of using children with normal speech as models, by careful mixing of normal children and those with language deviation. Organization of such "special classes" is critical if there is to be the use of language and communication which is intended to help the deviant child. Left in an ordinary nursery class, the language deviant child (like the hearing handicapped) may simply withdraw or may be ignored. Deliberate arrangement of the situation is necessary. Having to attend to a number of children in the normal class, the teacher would find it difficult to give the prolonged and intensive attention necessary. Use of normal children as companions and models, or even as peer teachers, can help overcome the difficulty of providing practice or experience of real conversation. Some Ontario schools (e.g. Simcoe County) are successfully using a "peer teaching" arrangement.

Remedial language programs must be developed so that they can be applied and expanded in use by parents and others in the child's language community.

Severely handicapped children and very young language-delayed children need a one-to-one teaching/therapy relationship before they join a group class. Sign language and other forms of symbolism also require one-to-one work before the child can enter a class setting.

11.13 The Principles of Language Remediation

What are the principles of remedial language?

Ruder and Smith (1974) advise: "Train the language events but seek the interdependency of events so that the language system can be learned with economy and functional permanence".

Guess, Sailor and Baer (1974) stress: "All essential language content cannot be taught unit by unit. The essential strategy, therefore, should be to teach a child to acquire a functional language. The key features can be devised from a functional analysis of systematic language use."

One of the best summaries of available programs is the one already referred to: "Language Intervention Systems for the Retarded; A Catalog of Original Structured Language Programs in Use in the U.S.A." by Fristoe (1975). Despite the title, the programs classified there apply to many categories of language handicap.

The report classifies data under the following headings:

Target Group

Level (of function of the group)

Model (Behavioral; cognitive; developmental; information processing)

Principles (This was by free response, so replies varied considerably in formulation.)

Emphasis (receptive, expressive language; motor imitation; non-verbal)

Requirements (of abilities needed to profit from the program)

Baselines (for entering programs and registering gains)

Exit Level (specific levels or results expected from the learner)

Competency Measurement (method for establishing whether the learner achieved the goals)

Structure (highly, moderately, or slightly unstructured)
-- This was related to whether the program was written in steps or lessons; whether lessons were in a structured "script" requiring the teacher to carry out activities in a prescribed manner.

Recommended length of time and frequency of each session.

Objectives specified

Criteria specified (for reaching each goal or objective)

Users (who could apply the program: speech pathologists, teachers, parents, etc.)

Setting (one-to-one therapy; individual work in school; small group; home-based; residential)

Form (book or kit or other means of guiding instructor; whether specific materials are provided or must be supplied)

Research available

Learner effectiveness (evaluation studies)

Bibliography

Status (whether program is commercial, being developed, etc.)

The classification of data on programs is useful but could be improved. It was noted that the term "Model" led to replies of limited agreement and much ambiguity. "Type" of program again seems to pre-empt discussion of how programs can vary and to limit choice severely. Entries such as "Principles" led to a considerable variety of response, some describing the linguistic or learning structures of the program, others merely administrative procedures.

Failure to distinguish between content and sequence on the one hand, and instructional procedures on the other, is one fundamental weakness of the classification. This accounts for the confusion and ambiguity surrounding the concepts of "Model" and "Principle" and "Structure".

Structure is defined as a measure of strictness of sequence of material as presented, and the occurrence of a script or program governing the procedures of teacher/therapist.

In accordance with earlier statements in this chapter, it is suggested that the term "Structure" should be reserved to describe the content and sequence of the program. For example, the extent to which it follows a rational sequence of linguistic structures to be learned, either because they occur in a natural developmental sequence or are judged to be the best sequence of prerequisite behaviors.

Instead of "Structure", it is suggested that the word "Programmed" should be substituted to describe the degree to which a program is pre-planned, follows strict sequences of lessons, or units of instruction, strictly defines the response of the teacher and child by means of a "script", or frames of response; builds on precise patterns of competence and reinforcement. A highly programmed system may be one based on an operant conditioning sequence, or on a specific sequence of lessons, or on a strictly defined set of language drills.

The difficulty with most categorizations is that they do not wholly reflect the precise nature of a given program, and do not indicate the fact that a program can move (as the Bricker program does) from one base to another in the course of the child's learning. For example, from a Piagetian analysis of the child's repertoire with objects and pre-verbal symbolism to a behavioral sequence of learning forms of receptive, then expressive, imitation. It would be better, in many respects, simply to list the sequences adopted, with a note on which are viewed as most important and prominent, e.g. discrimination of objects, motor imitation, vocal imitation, rote response, meaningful reception, etc.

The Fristoe report also fails to bring out the fundamental difference between approaches to language which use language as vehicle and follow some kind of rational or normal linguistic sequence, and those which adopt content and sequence of learning which would not be encountered in normal learning. Examples are the Distar program with its emphasis on mastery of discrimination of sounds and graphemes, and the Association Method which also begins with quite artificial patterns of sound and visual equivalents in order to establish the associations used to build up pronunciation and perception of words.

The emphasis on reading as a vehicle for learning speech is not brought out sufficiently. This use of reading occurs in Distar, McGinnis, and in programs such as the Moor House (U.K.) program developed by Lee, or the "remedial syntax" used in John Horniman School (U.K.). These latter two use colour coding and visual sequence as a guide to the language-disordered child in developing correct sequences of word-order and placement of linguistic structures such as noun/subject, verb, adjective, etc.

It would be better, at the cost of more detail, to list the sequences involved, e.g. the progression in the John Horniman program from systematic sign language which has a conceptual and syntactic structure. It is used as the foundation of communication to remedial syntax, employing reading, and so to speech.

Another basic difference which needs stressing is that between a program which aims at limited functional speech, or non-verbal response for specific situations, and that which aims to give the child, at some level, a system of language and possible access to generalizing, and to generating new patterns of language.

The next chapter contains an analysis of programs which attempts to build into the Fristoe model these additional considerations. Use of such a set of descriptions may enable the practitioner and the administrator to distinguish more clearly between the various programs, or mixtures of programs, being used and to make decisions on a better-informed and rational basis.

11.14 Behavioral Approaches to Remediation

Guess, Sailor and Baer (1974) emphasize, as behaviorists, the need to teach specific language skills in functional contexts. Their approach, used with non-verbalizing non-vocal children, emphasizes procedures of teaching rather than content and sequence:

1) Pretraining evaluation and assessment of repertoire of child
2) Training vocal imitation, with three major variants:
    a) consecutive motor and then vocal imitation;
    b) concurrent motor and vocal imitation, in order to generalize imitation in diverse contexts;
    c) direct vocal imitation
3) Functional speech and language training

As noted in discussion of operant-conditioning, the weakness of this approach is that it deals in detail with specific skills and linguistic responses, but still has to resolve the difficulty of choosing the most appropriate sequences.

On the other hand, Guess, Sailor and Baer outline four major principles or stages in language teaching:

1) Reference: helping the child learn productive labels for things and actions of importance to him, by acquiring motor and verbal responses to these objects and actions.

2) Control: being able to organize these references in requests graded in difficulty, e.g. (a) "I want" (b) "I want (a thing)" (c) "I want (an action)" and (d) "I want (an action with a thing)".

3) Self-extended control: the child is taught to ask for information in order to keep in contact with and extend his learning. This is why learning to ask questions is important. Lee (1974)

points out the difficulty of question forms and the concept of questioning for the child with marked language delay.

4) Integration: learning to store, retrieve, and use language functionally. The program needs to promote techniques for memorizing and applying language forms.

Despite the different assumptions about learning, and emphasis on instructional techniques, there is in practice considerable common ground between programs. The basic difference seems to be whether the program begins with the child's experiences or presents him with a pre-planned set of items to master. All programs address themselves to the problem of sequencing instruction in the most effective way, and relating the linguistic structures to be taught to the child's capacities and previous learning. Whether the program is developmental or not, there is the acknowledgement that structure is needed.

As an example, Kent (1972, 1974) has developed a systematic functional approach to teaching language to the mentally retarded based on behavioral principles and task analysis. The program seems to be applicable to a variety of language-disordered groups apart from the retarded. The sequences, described by Kent, resemble quite closely those detailed by Bricker and Bricker (1974). Indeed, the sequences of instruction proposed are likely to form part of most systematic programs of language remediation.

Baer, a behaviorist, criticizes the assumption that cognitive level is the independent variable on which learning depends. He reverses this proposition. "The abstract, conceptual, cognitive or representational relationship is not the independent variable of the study but the dependent variable; it is the outcome; it is the result of a set of specified training procedures which we applied as designed in the interests of producing not simply a one-to-one response -- but a generalized response".

Conceptual behavior, symbolizing, and response to language is, therefore, to be explicitly taught. Again, in actual practice, the developmentalist and the behaviorist may not be so far apart.

Premack (1974) takes up a similar point, which is crucial for effective teaching. He found that his non-human subjects encountered considerable difficulty in classifying objects as "same or different". Analysis of what was involved in developing this ability suggested a need for a finer grading of the training tasks and re-organization of the experience presented in order to focus more clearly the discrimination to be made.

In this instance, the subject was not only taught to match two objects out of three, as it had successfully done, but also, with the same materials, to pick the "odd man out" from the three. This apparently simple change in pattern of discrimination established the foundation for "same-different".

Lee (1975) gives illustrations of the ways in which the therapist must alter and focus teaching so that the meaning and the structure of what is to be learned becomes clearer to the child. In other words, if there is difficulty in learning, or apparent lack of readiness, this should prompt the teacher and programmer to conduct a detailed task analysis, and review, of the sequence of prerequisite behaviors and developmental stages. This may lead to altering the experiences or tasks to be presented, a finer grading and repetition of learning, and a more effective focussing on what is to be discriminated as stimulus or response.

An effective program does not simply rely on the child's readiness for the next stage but prepares him for it.

11.15 Semantic/Conceptual Foundations of Language

The content of instruction is assumed to be the semantic categories directly related to the objects and events in the child's experience. Single frequently-recurring experiences are systematically used to "mark" these concepts linguistically and label them. Then multiple examples are used to illustrate and extend the same concept. When the child has "mapped" his experiences linguistically in limited ways, he is led on to form more complex patterns involving actions on objects, and so to using syntactic forms (linguistic structures) in functional, meaningful contexts.

Lee (1975) makes a clear distinction between the pre-verbal and early language behaviors which precede the production of simple sentence patterns. Her program assumes that the child has a range of semantic responses, of basic linguistic structures enabling him to take part in the "conversation" involved in working on a story which is carefully structured in terms of the child's level and needs, but also taking account of interest and meaning.

Slobin (1973), in discussing normal language acquisition, suggests that it provides for "the learning of new functions with old forms and the learning of new forms with old functions".

This seems to be a good guide to planning remediation, too. There is a need to be flexible in making use of the child's previous learning and also in adapting a variety of techniques and levels of response -- sometimes non-verbal as well as verbal.

It is customary, in therapy with adult aphasics, to use a variety of techniques such as gesture, tapping out rhythm, visual explanations, explanations of how to locate the position of tongue and lips, etc. An example of the transition between old and new, relating the verbal and non-verbal, is the following: in training a child to develop negation of a sentence, a preliminary step is to get the child to utter a request, e.g. "Want cookie" and add to it a non-verbal gesture such as a shake of the head. The next step is to add a verbal marker "No", as in "NO want cookie", and from this develop the grammatical form, reproducing, in effect, the normal development of negation. (Lee (1974), Bloom (1970)). Training "yours" and "mine" distinctions in severely handicapped or retarded individuals may require a great deal of active gesturing and modelling of action to cue in the verbal distinction.

Lee (1974) emphasizes, in her analysis of children's sentences, that children with marked language delay may have difficulty in acquiring certain grammatical structures because the distinctions communicated by these expressions are not fully understood by the child.

11.16 Instructional Procedures

The teacher/therapist needs to structure and focus learning sometimes by emphasis and intonation, by using patterns which bring out more clearly the item to be attended to, or by reducing the length and complexity of the language, i.e. using the child's sentence. It may be necessary to add additional graphics or dramatic support, to build up experience of a meaning which is missing for the child.

By contrast, instructional procedures describe the techniques used to teach the content and control the sequence. They may range from behavioral approaches such as operant conditioning which strictly define the stimulus to be presented, the response to be made and the shaping of response, to much more open approaches. The instructional approach may stress strict definition of task, with much controlled practice, as in classical articulation therapy or language "drills".

Essentially, "instructional procedures" cover matters such as focus and control of the child's behavior (management), structuring of materials, means of presentation, pace of presentation and the control of discrimination and reinforcement. They cover choice of techniques such as imitation, modelling of language, behavior, expansions of child utterance, reduction of complexity of language by teacher/therapist to accommodate the child's language or memory difficulties.

They relate to whether presentation of information is by direct instruction and modelling, or by using the child's response and mapping language onto it, or using the environment to stimulate and shape language in a developmental manner.

Obviously there is an interaction between choice of instructional procedures, content and sequence, and also assumptions about the nature of language and learning. The behavioral approach usually will favour task-analysis, specified and pre-planned sequences of instruction, and an analysis of language sequences, based on empirical information on which behavior is prerequisite to the next. Teaching will likely be operant-conditioning or prescriptive teaching. Techniques emphasized are likely to be imitation and repetition. Conversely, the developmental approach will favour reliance on developmental language data, emphasis on the relevance of the child's concepts and semantic understanding, use of materials and situations meaningful to the child and of his normal language environment.

Nevertheless, there can be considerable variation and combination of factors in any given program. In theory, at least, instructional procedures need not necessarily be related to particular choices of content and sequence. Confusions between considerations of content and instructional procedures have led to confused evaluations of programs, and preference or rejection on the basis of judgements which are partial or prejudiced.

Programming is a concept which is part of instructional procedures. It is related to the concept of structure, but is not the same. Programming emphasizes the use of specific behaviors as criteria for entry to learning, the laying down of strict sequences of learning, pre-planning the tasks to be accomplished and pre-planning the choices of response allowed. In programmed materials, the kind and level of cueing and prompting is likely to be strictly defined, as well as the kind and frequency of reinforcement. Programmed materials define strictly the specific objectives to be gained and the criteria for success and transfer to the next sequence of learning. Programming requires strict structure (content and sequence) but a program may have a high degree of structure without being highly "programmed" in terms of instruction. The best example of a highly programmed approach is seen in operant conditioning.

Programming instruction usually reduces the choices or free responses available to the child; by definition, it sets out to control, shape, and pre-plan learning. What is not so often realized is that it often reduces the alternatives available to the instructor.

In extreme, the teacher is told in detail how to present, stimulate, prompt and confirm, and what adaptations he is to make (e.g. simplifying, reducing language, repeating, advancing the learner to a more advanced form). Examples of this are the Gray and Fygetakis program, which is described as a structured operant-response program, and the Distar programs for language and reading.

Such programs probably meet the needs of particular groups, e.g. non-verbal or extremely handicapped children, or groups at a particular point in learning, e.g. establishing language responses, or those such as autistic children who need extreme consistency and frequency of reinforcement.

Developmental programs such as Reynell and Chedoke, Miller and Yoder, or Lee, are structured but not highly programmed. Such programs leave much more choice to the teacher and to the child in interaction, in altering pace, selecting alternative experiences or responses in the short term to meet individual needs or the demands of the situation.

In one sense, highly programmed approaches impose an external control on learning. Control is exerted through the materials and instructional procedures, at the cost of having alternative choices or adaptability outside precisely defined limits. By contrast, in structured but developmental programs, the control is arrived at through the teacher/therapist acquiring and internalizing skills and criteria -- in effect, calibrating and adapting to the program. This is seen explicitly in the Lee story-conversation program, where the therapist is free to devise materials to meet children's experiences and needs, but must take account of the current semantic situation and structures to be acquired. It is customary for therapists to write their script, then discuss and try out the "lesson" with colleagues, if possible. External programming removes the need for worrying about goals and procedures, but at the cost of loss of initiative and flexibility; the program is paramount.

It seems preferable, considering the varied needs of these children, to build up internal programming in the skills of teachers -- storing, comparing, adapting experience of programs in actual interaction with children.

11.17 Specific Techniques in Instruction

The following is a discussion of some of the particular issues in instruction:

There is considerable common ground in many programs, despite their greatly differing emphases, in use of (1) language graded to the child's level, (2) use of motor and verbal imitation as an important teaching technique, (3) using techniques such as modelling a response for a child, expanding a child's utterance, (4) use of physical and verbal prompting or cueing to help elicit responses, with more or less systematic reduction of these cues as the child progresses.

Imitation may not be the major vehicle of normal language acquisition, but it is an important aspect of language teaching. Imitation can be viewed as a special response class of discriminated operant responses. (Lovaas (1977), Koegel (1973)) It can, therefore, become generalized, and one of the aims of instruction is to establish generalized imitation as an effective vehicle of communication between teacher and taught.

Imitation may be rote copying. Brown et al (1965) showed, early in the research on child language, that a child might be expected to imitate a linguistic pattern before he could comprehend, and this in turn before he could produce it spontaneously. Menyuk (1969) and others, however, have shown that even when attempting to imitate a sentence, the normal child will filter it through his system of grammatical rules and alter the reproduction in predictable, meaningful ways. The language-disordered child, by contrast, is more likely to respond by rote or to alter the sentence by simple omitting, or confusing part, i.e. because of lack of comprehension or memory overload. Not all imitation involves comprehension, but for imitation to be most effective, comprehension is probably necessary.

Imitation responses should be made as meaningful as possible. Through imitation, new features can enter the child's emerging linguistic responses, if he imitates utterances at a level appropriately more complex than his own. Imitation can be shown to be a function of the particular characteristics of the model to be matched. Careful analysis of the stimulus allows characteristics of the verbal model such as complexity, length, order, or structure to be copied without requiring every feature of the teacher's utterance to be reproduced.

Through presentation, cueing, and prompting, and through checking on the acceptable level of response, the teacher can move the child from no response to an approximation in the direction needed, e.g. "Give me the cup" to "Give cup" rather than "Give me" or "The cup".

In several programs for young or retarded children, a phase of motor imitation precedes verbal imitation. This, first, because it is usually easier for the child to gesture a response, and because it can be much more easily focussed or even physically cued. Secondly, because the motor response gives a signal which the teacher can use to establish further response (e.g. use of pointing). Thirdly, because the motor response may be coupled with the verbal and cue this in.

It is an open question, a matter for empirical research, whether motor imitation must precede verbal imitation or must be coupled with it.

Echolalic responses and "mitigated echolalia" (Fay (1967)) can be used as bases on which to develop more useful language responses. (See Santa Barbara Project Manual (1976)) The basic concern in using imitation is not to regard it as a be-all and end-all, but as a useful technique which should be expanded and replaced by more interactive responses in the course of language therapy.

Modelling responses for a child is another form of imitative procedure; in effect, presenting a model for imitation, then repeating and confirming it when the child replies.

Expansion of the child's utterance into a more complete or coherent form is another natural technique in the interaction between adult and child. Brown and Bellugi (1965) described this first as a repetition of the child's utterance by the parent, with addition or correction,(e.g. child: "Baby bibby"; parent: "That's baby's bibby") and saw it as a fundamental aspect of interactive language learning. Cazden (1972), however, in a carefully controlled study, found that children whose parents were instructed to respond with a high proportion of expansions of the child's utterance did not develop language as well as children who were exposed to more natural, fuller responses.

It has been suggested that children receiving expansion responses were only having their syntax corrected, whereas those receiving comment and elaboration were receiving responses directed to the semantic and conceptual aspects of the situation (i.e. meaning) as well as incidentally to the syntactic.

Stremel and Ruder (1973) suggested that "expansion" should be defined more rigorously, i.e. teacher's correcting response to a child's production of a target utterance, with a tangible reinforcement (i.e. reward or confirmation of correctness) to encourage the child's expanded imitation of the target utterance. This expanded utterance should be the base for expanding to the next level of mastery; e.g. if a "subject-verb" pattern is produced by the child, this is confirmed by the teacher but the reinforcement accompanied by an expansion to the next level of complexity -- "subject-verb-object".

By using expansions and observing the child's response, it can be gauged whether the child can move to the next level without explicit training. If the child spontaneously produces, significantly often, expansions which move him up to the next level, this suggests that the sequence of learning is appropriate and well-graded in terms of linguistic structure. For example, Stremel (1973) found that when he used the subject-verb pattern, 60 children spontaneously produced subject-verb-object, as compared with 117 who needed the therapist to produce the expansion. By contrast, when Stremel tried "subject-verb-object" and tried to induce the child to expand to "subject-verb-preposition-object" there were only 11 spontaneous expansions compared with 83 uttered by the therapists. In other words, success in spontaneously adding to the complexity of linguistic structure depends on the sequence involved in the structure and its complexity.

Reducing the complexity of the structure is the reverse of expansion. It may be used with young children (or children with language disorder and poor auditory memory) to achieve confirmation of the pattern they are attempting, where the original sentence was too long, too complex, for their poor auditory memory; e.g. "I see the dog". Child: "See dog". Teacher: "Yes, see dog." Obvious reducing, like imitation, is a phase in the interaction, and the child would be moved as soon as possible to the more complex utterance, not simply reinforced for his reduced utterances.

There are little hard data on the respective merits of various techniques. In an effective sequence of interaction, a variety of techniques might be used.

Murray (1974) suggests that to induce reciprocal exchange, question and answer, comment and response, are more effective than either modelling or expansion since the consequences of such inter-action are related directly to the act of communication; they are not dependent on external tangible reinforcers or shaping to an arbitrary criterion of correctness. The reciprocal interchange in the "conversation" of the Lee program is claimed as one of its additional advantages both linguistically and as an effective technique of teaching.

Crystal (1976) suggests that language remediation should draw on the techniques of second-language teaching. He quotes the use of incremental drills; i.e. the learner is asked to complete an utterance with a fixed phrase or a spontaneous utterance, possibly with carefully modulated prompting through intonation.

Another technique is substitution drill in which the learner substitutes one or more items into a standard pattern; e.g. "I see a car... I see a boat". By arranging the conditions of replacement, the therapist can direct the expression to be selected and practiced. As contrasted with expansions, it is possible to use contractions; i.e. collapsing two sentences into one, deleting words or phrases, replacing a complex construction by a shorter form e.g. noun phrase by pronoun.

Embedding drills require the learner to combine two utterances so that one is incorporated within the other grammatically; e.g. "Father is there. Father is hungry." "Father, who is hungry, is there."

Transformational drills require the learner to change statement to question, active to passive, positive to negative, to change tenses or word order. All these might be incorporated within imitation, modelling, and expansion techniques.

Crystal (1976) gives considerable attention to question-answer exercises. As Lee (1974) points out, the question-answer is a difficult structure, both grammatically and semantically, for many language-deviant children. Mastery of this structure is very important. Question and answer often form the majority of the teacher's interaction with the child. There are differences in difficulty between subject-verb inversion questions (such as, Do you?, Can you?) which can be answered with a gesture or Yes/No, and those questions beginning with where, what, why, etc. which require a linguistic formulation for response. Crystal warns against the difficulty of the general question which gives the child little factual or linguistic support for his answer; e.g. "What is he doing?"

Crystal emphasizes the value of forced answer questions of the pattern: "Is it X or is it Y?". He points out that these can be used to emphasize the correct answer; e.g. to elicit verb, object, verb and object, subject and verb, subject, verb and object, in that order of linguistic development. An example emphasizing the production of the verb is: "Is the man running or is the man sleeping?" If the child does not respond, it may be repeated, at varying speed and loudness, altering the order of the verb, adding cue phrases to focus attention, pointing to pictures, giving an example of the action or other appropriate cues. Crystal also suggests some eleven responses by the teacher/therapist which are likely to have negative or unproductive responses.

11.18 Specific Aspects of Programming

The presentation of the task should simplify and organize it for the child. Much specific language training is serial. It seems plausible and in line with normal language learning, that linguistic behaviors which are interdependent should be learned concurrently, and helped to reinforce one another rather than separately and serially. It makes sense to set up a program to help the child discriminate and interrelate the various forms of "s/z/ez" which are the common variants of noun plurals; e.g. "cats, dogs, horses".

Within this concurrent training, the form which is easiest to learn or is most frequent should be selected. In the plural for nouns, the /s/ may be the first one acquired in the course of normal development which is one criterion. It may also be the one most readily assimilated to the range of environments containing /z/ and /ez/. On another criterion (perceptual saliency) the /ez/ might be the one which is most efficient to learn first. Clearly, as the behavioral analysts point out, the different criteria for choice of sequence need to be evaluated empirically.

Ruder and Smith (1974) point out the need for a criterion of what is independent and what is interdependent in a linguistic sequence of behavior. They propose "Component Content Analysis" as an answer.

In this approach, the linguistic structure is analyzed into its salient features or components; e.g. (1) concepts mapped into a particular linguistic structure (2) a specific grammatical form or principle and (3) phonological similarity of topography. For example, the plurals /s/ /z/ and /ez/ vary as follows:

1.	Linguistic concept	plural	all same
2.	Grammatical principle	affix	all same
3.	Phonological topography	s/z/ez	different

This analysis suggests that these plural endings are interrelated.

Ruder and Smith suggest that, using this analysis to guide the selection of structures, related and unrelated items in language should be compared to see (1) how far learning one transfers to the other, and (2) which is the best sequence of learning so that learning one item transfers to the other. The technique is to train to criterion of success on one structure then probe systematically to find if there is any spontaneous transfer to the other. If the second item does not show transfer, it is in turn trained to criterion. Next, the item which was taught second is taught first to another group and probes made to see if there is transfer to the other structure (now taught second) which again is trained to criterion if the transfer is non-existent or incomplete.

The significant comparison is (1) between the number of trials needed to reach criterion of mastery for an item when it is not initially trained, compared with (2) the number of trials needed to reach criterion when it is directly trained. The ratio of 1 to 2 is an index of the probability of transfer, i.e. that behavior which is not directly taught will occur as a result of training on a related linguistic structure. This can be called a "sensitizing quotient" and is presumably what happens when a child generalizes and develops rules in real life language learning.

It was found, for instance, that teaching the copula "is" before the structure containing the auxiliary "is", as in "is going", created efficient transfer of the use of "is". If the sequence was reversed, this transfer of learning did not take place. Learning plurals /s/z/ez/ in this way is likely to show effective transfer and reveal which order of learning is best. By contrast, it is unlikely that learning plural /s/ will transfer to effective use of /s/ when used as a possessive ending to a noun.

It is suggested that application of techniques, such as those outlined above, and employing criteria for the most effective sequencing and transfer of learning, should help to improve the instructional procedures of remedial language programs. It also should give information on the more effective sequencing and structuring of the language material.

In language teaching, it is useful to distinguish between the "code" or rules to be used and the strategies which are based on these (see Koestler (1965) for a similar distinction). The code determines what must be learned, or the sequences which have to be followed, but it does not determine how the "language game" is to be played; i.e. the actual presentation by the teacher, the experiences to be used, the materials employed. The best and most fundamental programs, in the sense of adaptation to the child's needs, are those which allow the teacher and taught to adapt to one another, to inter-act within a planned, rational system of objectives and informed assumptions about the child's needs, difficulties, and ways of learning.

11.19 The Importance of the Abilities and Characteristics of the Child

The abilities and the needs of the child dictate whether highly structured and programmed approaches are needed. Children who have poor receptive language will have different problems and needs from those who have receptive language but poor or no expression. There is a difference between the child who cannot vocalize and one who has some productive language, however limited or distorted. Evans (1971), discussing autistic children, points out that there is a considerable difference between the problems of teaching language to those who have no language and those who have some.

Age is an important variable. Young language-delayed children, i.e. those aged below 4 years, will often require their language to be built up, using linguistically structured experiences which are carefully selected for content and sequence but related to their developmental needs. They need help to make the transition from pre-verbal symbolic and gesture behavior. Remediation must take account of several factors simultaneously, so that articulation is discriminated and practised in the same situations which are used to build up the child's production of language structures -- as in the North Western University early intervention program.

11.20 Transfer of Learning

Highly programmed and structured approaches, in general, emphasize controlling and defining the child's learning within a teaching situation. Behavioral modification (operant conditioning) typically concentrates on organizing the child's responses within the learning situation by increasing the frequency of appropriate responses, and shaping specific behaviors through schedules of reinforcement.

These approaches can be very successful in establishing specific patterns of response in children with little or no language. The difficulty of operant conditioning -- or "drills" in general -- is that it does not ensure that the child can select and use that language in his own community, nor that he can extend and generalize his linguistic responses.

Lee (personal communication) comments that, in her opinion, much of the real learning of language takes place outside the therapy situation, and that behavior-management approaches may work by simply setting the scene for this through developing appropriate attending and discriminating behaviors. Lovaas et al (1973) reviewed successful work in establishing specific verbal responses in severely handicapped children. He reported the enormous effort in time and repetition of responses needed to produce generally disappointing levels of response. There was limited evidence of generalization of specific verbal responses to situations outside the one over which the therapist had control.

11.21 Alternative Systems of Language

Language programs must take account of pre-verbal language or symbolic behavior. Some children do not develop verbal language, or may do so only after prolonged and tedious sequences of learning based on repetitive drills. A number of autistic children and a high proportion of severely mentally retarded children fall into this category. In addition, there are the children, such as the cerebral palsied, who cannot produce the correct articulatory patterns for spoken language because of motor problems; also children with severe apraxia or motor-programming problems in organizing speech.

For these, an alternative form of language system may be essential. Menyuk (1974) makes the point that the acquisition of language does not depend entirely on cognitive level, and that there seems to be a specific difficulty for some children in achieving the level of abstraction required to learn a speech system. Making the transition from non-verbal concepts and symbolizing to a phonological system requires a considerable feat of abstraction, linking a set of arbitrary units of sound in arbitrary sequence with the language system already established.

Premack (1974) and Moores (1974) demonstrated that true language can be designed and taught apart from phonology and auditory processes, i.e. speech. The perceptions required for symbolic functioning can be specific to visual and tactile processes, and the learner can have a less complex set of tasks to master on the way to developing a functional language system. They suggest that the initial overload caused by the complex phonological receptive motor processes required in speech can be set aside or postponed. They show that even at the sub-human level, semantic information can be mapped effectively onto a conceptual base by using concrete symbols obeying the rules of a language system.

Children who cannot cope with speech can acquire an alternative language system. This may be: sign language, use of special visual ideographic codes such as the Bliss Symbol system, or alternatives such as pictorial symbols, rebus, picture-boards, etc., or use of concrete symbols as in the Non SLIP system.

It is now clear that manual sign systems in common use are true language systems with their own semantics and syntax, modalities of communication; e.g. definition of first, second and third person by position of signing. (Wilbur (1976)) They are acquired in much the same way as a verbal language, through imitation, modelling and interaction. Many of the techniques of learning language apply. Established sign systems may appear to be gestural and "iconic", i.e. picturizing objects directly, but it is clear that they rapidly become conventionalized and structured, like natural speech, so that the signs and their inter-relationships have to be acquired as a separate language. Those who wish to communicate with the learner must acquire the language.

Research indicates that signs may be acquired by the young child a month or more earlier than he would normally acquire spoken language, possibly because the use of gesture is more primitive and nearer the basic actions/operations of the child, and signs are more perceptible than articulation.

Research suggests that, far from inhibiting the development of spoken language, the acquisition of signing is likely to stimulate it. (See Dever (1976)) There is good reason for this. Spoken language is formed on a template of an existing conceptual and symbolic system in which the concepts of classification, order, meaning are built in.

When a child acquires a sign system, he has an organized system of language which enables him (1) to communicate directly, (2) to receive messages about the semantics of his world, and (3) to perceive that language (signs) is systematically related to interpreting and communicating facts about the world and about language itself. He has a model of a language system on which to build, as well as being able to use that language system to establish facts about language.

It is customary, in teaching signs, to verbalize the word or expression and help the child to vocalize. There may be difficulties in this for autistic children who attend to one aspect of a stimulus complex (Koegel (1973)), but for many others, covering a wide range of ability, there seems to be no apparent problem, but rather a reinforcing effect.

At worst, the child is given a substitute language for expression. At best, the manual system may be a "prosthetic" device which helps the child. That is, he can express himself and so make use of his existing receptive (spoken) language. Use of sign language may stimulate vocalization and in due course, with suitable mediation, the development of some level of expressive spoken language.

Receptive aphasics, who can make a little sense of spoken language, can learn for the first time a systematic language, and from this learn the meaning of objects, pictures, etc. and to acquire reading; from this they acquire spoken language through a process of building up their vocabulary and syntax from external cues of colour and position. This is now the chosen method for severely language disordered children in schools in the United Kingdom.

There is evidence that autistic children who have failed to acquire language, or have acquired minimal language as a result of long efforts through operant conditioning techniques, can acquire at least a minimum of either receptive or expressive use of signing. Progress may vary and can be slow, and limited, by the same factors which affect their symbolizing and understanding of spoken language, but still constitutes a higher level of communication than previously existed.

The question is whether children who show in their early years severe difficulty in coping with spoken language, for whatever cause, should not be put on a sign-learning program as soon as possible. There is much to be said for the use of sign language as a developmental program, i.e. used as an early and direct approach, or as a remedial support, rather than as a compensatory response when other programs in spoken language have been tried and failed. This is now the approach in one school for the hearing handicapped in London, England, which has for some years used sign language as an auxiliary remedial program for children who have persistently failed on an oral approach and now proposes to introduce it from the beginning of the child's placement in school.

One difficulty with sign language is the need for teachers and parents to learn a new and complicated system, to do so effectively, so as to teach children fluently and efficiently. A consequent difficulty is the limitation of the speech community to which the child has access.

It must be remembered, that without adequate communication of some kind, the child's learning in all areas is hindered at the age when learning is most rapid.

One major difficulty at present is the variety of sign languages which may be taught. There are six or more major variants, ranging from American Sign Language to the Paget-Gorman system used in Britain (Moores (1976)). The systems vary in their degree of conceptual-semantic regularity, e.g. in some, the signs for different related concepts have no similarity whereas in the Paget-Gorman system, the claimed advantage is that a concept such as "animal" has a basic sign to which markers are added to signify specific classes of animal.

The systems vary in their syntactical structure and in the degree to which this incidentally, or deliberately, parallels the syntax of spoken English. It is claimed, for Signing Exact English, that it is an efficient sign language but also enables the message to be transmitted and read in spoken English word order and syntax. The benefits of this are both to the normal listener, who can receive a message in the order of his spoken language, and for the learner in making the transition to spoken or written English.

It is obviously essential that there be standardization of sign systems and effective programs for teaching sign language.

A system which has achieved considerable popularity is the Bliss Symbol system, based on Charles Bliss' "Semantography", an attempt to create a universal visual-ideographic set of symbols. The symbols are, as far as possible, attempts to mirror the objects and actions they represent while being ideographic, i.e. the symbols are partly iconic, like early hieroglyphs, and not abstract like Chinese ideographs. The system was originally adapted to meet the needs of cerebral-palsied children who had receptive language but were unable to use spoken language. The system can translate to printed English equivalents which are normally printed below the ideograph. The system has been extended for use by severely mentally retarded individuals, with some success, depending on the intellectual level and symbolic functioning of the individual. They may not acquire all 400 symbols, but may learn enough to communicate immediate needs, feelings, and elementary references to objects in the environment.

Currently, the Bliss Symbol system is being developed by having a standard lexicon created for it. One difficulty has been to decide how far, within the spirit of the system, meanings can be composed by simply adding symbols, and how far additional specific lexical signs are needed for particular concepts. It is also being adapted to various more efficient forms of delivery, i.e. electronic displays to overcome the cumbersome scanning and focussing needed now to indicate signs.

Research is being carried out (on the concurrent presentation by computer) on the effectiveness of linking a spoken expression coded from the Bliss Symbol, when this symbol is selected.

One difficulty of this system is that, like manual sign systems and ideographic systems in general, it has no specific syntax except for the addition of symbols in proximity to one another, or to determine and qualify one another. A sentence translated from Bliss Symbols may or may not read in English order, or have English syntactical markers, though it will have English semantic value if properly composed. Another factor is that the system was devised by an adult, making assumptions about the resemblance between given symbols and the objects represented; children must make an effort of abstraction to acquire and memorize the symbols, and the symbols sometimes cause difficulty. For example, the symbol for walking (legs) looks obvious to a normal walking person but may not be recognized as such by a child who has never walked. If children were to evolve their own visual symbolism, the symbols and the relationships between them might well be different from that of an adult system.

There is a summary of references to the Bliss Symbol system and other pictorial systems in Lloyd (1976). The Bliss Symbolics Foundation publishes a newsletter.

For individuals who cannot cope with the demands of an abstract sign system, or a pictorial system, there have been attempts to provide more concrete signifiers. Following the work of Premack who successfully trained a chimpanzee to attach meaning to concrete plastic symbols, to relate these to one another and to "read" and "write" simple sentences, Carrier (1976) adapted the principles and techniques. The Non SLIP method (Non Speech Language Initiation Program). This method is based on a set of varied plastic symbols which have a colour coding. The child is taught, by imitative and discriminative learning, to distinguish the symbols, to relate them to pictures, and to place each symbol of a particular colour coding in the correct slot in a sequence. When the various skills have been over-learned and put together, the child can select and put in sequence symbols to communicate messages at the level of simple sentences.

The grading and sequencing of teaching the program has received careful consideration. There are "branches" in the program to enable the child who learns inefficiently on some aspect to improve his performance. It is claimed that the system can be mastered in a matter of 12 hours in total; it has worked with children who made no progress despite extended periods of work on spoken language. The system does require that the child has concepts of common objects, the equivalence of objects and pictures, and ability to discriminate these. Despite being concrete, it may be too difficult for individuals who have little initial capacity to classify objects or symbolize. It has been said to work better with children who already have some vocalizing/verbalizing ability rather than those who have no spoken language at all.

It is obvious that the use of these alternative systems is called for when the language disorder is severe but the child shows some capacity to symbolize.

These programs are not a panacea. Children may bring to such programs the difficulties they encounter in acquiring spoken language. Fenn (1976), studying the acquisition of sign language by mentally retarded children, emphasizes the need to simplify presentation, reduce the conceptual load, and grade the learning to the limitations of the child. Difficulties in use of signs for expression reflect the child's semantic and syntactic confusions.

It is worth repeating that without adequate communication of some kind, the child's learning in all areas is hindered at the age when learning is most rapid.

12 A Guide to the Analysis and Selection of Language Programs

This presents a summary of the principles (based on theoretical and practical evidence) for the description, analysis and selection of language programs which emerged from the present study. The full analysis, as the end-result of the study, was available too late to be used in detail to analyze programs in the study, but contributed significantly to its thinking. The guide, in whole or part, would appear to be a useful guide to research worker, professional or teacher.

12.1 THE CHARACTERISTICS OF THE CHILD

The characteristics of the child which bear on choice of language program and need to be checked are:

1.1 Age Factors

Chronological age
Developmental level
Age of onset of language delay/disorder

1.2 Cognitive Functioning:

Verbal and non-verbal intelligence level/mental age
Special abilities/disabilities (other than language) viz. memory, motor, perceptual
Child's conceptual level: ability to classify, sequence, relate relevant stimuli/experiences

1.3 Pre-language Symbolic Processes

Level of understanding/use of imitative gesture
Level and kind of symbolic and dramatic play
Ability to manipulate and use common objects in the environment
Ability to relate normally to persons

1.4 Language Development

Stage of development in: vocalizing;
articulation/phonology;
linguistic structures (grammatical/syntactic);
semantics (grasp of common meanings);
action, location, belonging, negation;
animate/inanimate, male/female,
singular/plural, etc.
extent of receptive and expressive vocabulary

1.5 Existence of receptive language

expressive language
delayed/immediate echolalia

1.6 Skills/abilities Related to Language Learning

Level of ability to focus and hold attention to person/task
Ability to carry out motor imitation
Ability to carry out vocal/verbal imitation
Ability to attend to multiple stimuli viz. words/gestures/songs/pictures
Visual/motor skills in discriminating/making gestures/signs

1.7 Relevant Attainments
Ability/readiness to read written language

1.8 Nature of Language Impairment
Simple delay
Loss of language once acquired
Failure to acquire language
Impairment in specific functions: auditory memory, difficulties in temporal sequencing, rhythm, selection of sounds/words, understanding/production of grammatical structures, etc.

12.2 THE DIMENSIONS OF THE PROGRAM

A specific program should be checked for the following:

2.1 Title, author or origin of program

2.2 Group for which program is intended:
- age of students
- language or pre-language level
- diagnostic or educational categories of children
- relevant factors as listed in "Characteristics" above

2.3 Dimensions of program (some programs may utilize several approaches)
- behavior modification/operant conditioning (of sounds/words/ utterances/graphic symbols/signs?)
- behavioral (based on defined, planned sequence of stages and prerequisite skills, e.g. Kent; Guess, Sailor & Baer)
- programmed (lesson sequences; written script for teacher; specific direction and order of presentation, e.g. Distar, Gray & Fygetakis)
- cognitive/conceptual (based on child's concepts, experiences) e.g. Bloom/Lahey, Reynell, Chedoke
- developmental
  1. entry to program based on child's stage of acquisition of language
  2. content of program based on child's normal stages of acquisition of one or more aspects of language (e.g. Miller & Yoder)
  3. sequence of teaching or experiences based on normal stages of acquisition of language (e.g. Crystal et al)
  4. using experiences/activities appropriate to child's level of development and matching language to these (Miller & Yoder; U.C.L.A. Neuropsychiatric Center school for autistics, Ritvo)
  5. using "natural" materials and real-life situations or play appropriate to developmental level of child in a relatively unstructured and open way
- syntactic/grammatical (emphasis on following or developing pre-determined or developmentally based sequences of linguistic structure), e.g. sentence patterns, subject-verb; tense, person, pluralizing, etc.

semantic (emphasizing meanings, relationships to categories of experience, e.g. actor/action/object; possession; location)
phonological (articulation and production of speech sounds, intonation or auditory training)
functional language (acquisition of specific language skills or responses used for particular adaptive purposes) e.g. requesting or social interaction

2.4 Emphasis Expressive or receptive language or balance between these

2.5 Stages specifically included, viz.
- Motor imitation
- Vocal imitation
- Verbal imitation (words, etc.)
- Receptive use of words
- Discriminating between objects/word-labels for objects
- Rote production of words
- Requesting and refusal language (e.g. "Give me...")
- Meaningful use of words for objects,
- Sentence patterns .... etc.

(For more detail, check against sequences such as Nisonger Program; Kent; Bricker and Bricker; Miller and Yoder; Guess, Sailor and Baer)

2.6 Specific Content or Scope of Program
extent of vocabulary to be used/learned; degree of control over vocabulary; skills to be acquired; linguistic structures covered and sequence of presentation (or number and kind of non-verbal symbols, or signs); complexity of utterances

2.7 Stage of competence aimed at:
a) whether functional, use at the level acquired; or as a stage to acquire a higher level of language
b) approximate stage of language to be reached, e.g. 4 year level; competence in everyday conversation; ability to follow lessons normally, etc.

2.8 a) General aims of program (as specified, or derived from consideration of the content, tasks, stage of competence to be acquired)
b) Specific objectives set out, or specific stages to be mastered

2.9 Procedures for establishing a baseline or point of entry into the program (or for application of diagnostic information in decision)

2.10 Methods/materials/tasks for evaluating progress of student
(Built-in procedures for assessment; external criteria and procedures)

2.11 Procedures for deciding exit from program
(Criteria for level of competence or completion of program)

2.12 Setting/organization appropriate for program:
- individual therapy
- group therapy
- individual teaching in class
- small group teaching (up to 3 or 4 students)
- class teaching
- individual assignment/following prescribed program
- individual play/activity
- group play/activity

- at school
- in the home
- in residential institutions

2.13 Appropriate users:
- speech pathologists
- psychologists/other professionals
- trained behavior managers
- trained teachers
- child-care workers
- parents
- peers

2.14 Form of program:
- kit providing specific instructions and all necessary materials
- series of written lessons/scripts for teachers to follow (e.g. Distar)
- manual specifying procedures with elaborated examples, but leaving choice of specific materials or procedures to teacher (e.g.Lee)
- manual outlining procedures and sequences (guidelines) with illustrative examples
- kit providing variety of materials with suggestions on sequence and use but leaving some choice to teachers (e.g. Peabody)
- programmed/prescriptive materials (e.g. teaching machine and frames, programmed workbook, etc.)
- games or pieces of equipment together with limited guidance or with suggestions for a variety of uses by teacher
- completely open choice of materials or content by teacher and/or child
- audiotapes (with or without supporting guidelines or commentary)
- slides/filmstrip (with or without specific commentary or guidelines)

2.15 What materials have to be provided by the teacher?

2.16 Is there a need for specific pieces of equipment, e.g.
- Bliss Symbol boards
- Non SLIP plastic symbols and related equipment
- "electronic ear"
- amplifiers/listening centres
- tape-recorder (for published tapes)
- record-player (for records which are part of program material)
- charts
- etc.

2.17 Are one or more alternative non-verbal forms of symbolism used:
Non-SLIP; written language; Bliss Symbols; picture boards/rebus; sign language (specify kind, level used, expressive/receptive and relationship to other forms of communication); finger spelling

2.18 Does the program claim to be a form of "total communication", i.e. use of sign and verbal language, or other mixtures of forms of communication?

2.19 Describe the extent to which specific aspects such as the above differ:
a) at different stages of the same program,
b) to meet different needs, or
c) different levels of competence in the same child, or
d) needs of different groups of children

The above guideline is intended specifically for analysis of a distinct program. It may be usefully applied to describe the varying contributions of different parts or stages of a total classroom curriculum.

12.3 DETAILED DESCRIPTION/ANALYSIS OF A LANGUAGE PROGRAM

To be accurate and useful, the description of a language program must be detailed and take account of the several dimensions or aspects by which a program can be classified. A program may resemble other programs in some ways but be quite different in others. It is suggested that the reader use the following analysis by checking off those aspects which best describe the program which is being examined. Different programs can be contrasted as "same" or "different" in significant characteristics, or programs can be ranked in terms of each important characteristic and so compared and contrasted.

The features described below may be bipolar. That is, if a program is high on one aspect, it will be low on the opposite. On the other hand, the characteristic may be found in all programs but to varying degree. Characteristics may appear to be independent of one another , e.g. "developmental" and "structured", or may tend strongly to go together, e.g. some versions of the "developmental" approach tend to be associated with a less structured approach, i.e. a more "open" form of learning emphasizing experience and activity by the child as an important basis; "programmed/prescriptive" approaches tend to go hand in hand with specific skill teaching, strict sequencing and/or behavior modification approaches.

12.3.1 CONTENT AND SEQUENCE (Structure)

(1) The program has more or less explicit long-term goals ( )
short-term objectives ( )

(2) The program has a specific content ( )
(e.g. concepts, linguistic structures, semantic ideas, vocabulary or phonological skills or any clear choice and organization of such content) Specify:

(3) The program has a distinct sequence or set of stages ( )
(linguistic structures, abilities, skills)

(4) The specific sequences of linguistic structures or skills which build on one another do so:

- a) by following the "normal" developmental sequences of language acquisition ( )
  - (i) the most frequently occurring structures in a stage ( )
  - (ii) the apparently most important structures in a stage ( )
- b) by following a sequence of prerequisite skills/tasks established by experiment or practical trial ( )
- c) by following a sequence suggested by a particular theory about language or the nature of learning, e.g. from simple to complex; successive learning of two related structures; simultaneous learning of two related structures; OR the demands of the particular medium, e.g. Bliss Symbol/sign Specify: ( )

(5) The program can be varied and adapted to individual need in ( )
terms of stage of entry to program by child, stage of exit; ( )
in terms of pace of instruction ( )
in terms of particular materials selected for learning ( )
in terms of particular instructional approach or motivation ( )

but must have defined linguistic content and/or sequence

Specify the above:

(Semi-structured/Unstructured)

(6) The program does not select defined linguistic content or sequence or both ( )

(7) The program uses a variety of materials and learning situations to teach a variety of skills/tasks but ranging wider than language, e.g. academic/adaptive/social skills ( )

(8) The program is based on practical, day-to-day decisions on what language skills a child needs in the short term ( )

(9) The program uses a book or materials (e.g. workbooks) which have linguistic content but follow no particular pattern, e.g. functional language; teacher selection from Peabody ( )

(10) The program assumes there is more than one sequence of tasks or sets of materials or experiences which will lead to required language learning and these may vary from child to child ( )

(11) The program uses "open", relatively unplanned situations based on child's needs or interests (e.g. pre-school environment, unstructured play, field trips, conversation, general environment) ( )

NOTE: that a linguistically-structured approach can make use of developmental and environmental situations as in the Lee Interactive Language program.

12.3.2 INSTRUCTIONAL APPROACHES (Programmed-prescriptive vs. less programmed)

1. Specific sequences of learning, tasks or skills have to be acquired in specific order or specific ways under control of teacher or material (e.g. workbook) ( )

2. The program has a sequence of specific "lessons" or frames (in a teaching-machine or programmed-material presentation) ( )

3. Lessons are written out in detail or have a detailed "script" which the teacher must follow ( )

4. The program is likely to be based on a performance- or skill-analysis leading to specification of: behavioral objectives, specific skills to be mastered in sequence and levels to be attained Specify: ( )

5. The program has strict criteria for entry to learning and placement of child on the program ( )

6. The program has strict criteria for determining mastery of objectives/skills and for advancing the student, repeating tasks which are not mastered and final mastery Specify: ( )

7. The program is in fixed form for all students (e.g. workbook) or defines strictly the responses the teacher must make, i.e. there is little freedom to vary response on part of teacher or student except by the instructions of the program ( )

8. Emphasis is on skills and drills/practice for these ( )

9. The well-structured prescriptive program is likely to be based on a performance analysis or skill analysis of the objectives to be reached and the ways in which skills and sequences can be broken down in detail to attain these objectives (e.g. Kent; Guess, Sailor and Baer; later stages of Bricker and Bricker)

   Specify:

10. The program has clearly defined instructional procedures, e.g. cueing the child, imitation, expansion, reinforcement, fading out Specify: ( )

11. The program has defined kinds of levels of reinforcement/confirmation of success (e.g. correct responses before reward, correct repetition or discrimination of stimuli before task is considered sufficiently mastered) ( )

12. The program is likely to rely on extrinsic reinforcement e.g. primary reinforcement (food), tokens, approval, rather than intrinsic motivation (exploration, curiosity or satisfaction in completion of task). Need to Specify: ( )

NOTE: that, although highly prescriptive programs are quite distinct, elements of programming/prescription must enter many teaching approaches as either major or minor contributions, e.g. follow-up drills and reinforcement within a "developmental" program.

12.3.3 THE DEVELOPMENTAL APPROACH

"Developmental" has a range of meanings. Failure to distinguish between these leads to confusion in description.

1. "Developmental" can mean choosing content or sequence of language learning by basing them on the normal development of language acquisition/succession of linguistic structures found in the young child (as in Crystal (1976)) ( )

2. "Developmental" can mean placing a child in a particular program or stage of remediation by considering his developmental level in language, concepts, etc. (in relation to (1) above, possibly) ( )

3. With a young language-delayed child, placement at his actual developmental level in a program or learning environment ( )

   OR

4. With older or language-disordered children, placement in a program at a level "equivalent" to the developmental level or stage the child has reached in language, irrespective of his/her size or age, e.g. a 3 year old linguistic level of structure for a student much older who has only just reached this level ( )

5. "Developmental" may mean not relying on linguistic or conceptual structure derived from general considerations of children's development but drawing on the child's immediate interests and choices, his "natural" language activities, experience or play, or using the environment for "real life experience" in order to stimulate use and application of language structures/skills ( )

   (The typical "open" pre-school/kindergarten approach)

   NOTE: The above need specification. Commitment to one aspect of the developmental does not imply commitment to others, though this may be likely. The developmental approach (Sense (1) and (2) above) can co-exist with structured language content (see Lee and Crystal). A "skill/prescriptive" program is, however, unlikely to be found associated with a developmental approach as defined by 5 above (though, as noted, total classroom programs often have bits of many different approaches)

   Sense (1) of "developmental" is that used in following chapters of the report for Sequence "Developmental"

   Sense (2) of "developmental" is that used in the following chapters of the report for "Entry" (to program)

   Sense (5) of "developmental" is used in the following chapters of the report to describe what is there called "Environmental" developmental.

   NOTE: A majority of classroom language programs in the study had important components of the developmental in all three senses, but also important components of the programmed/prescriptive approach. (See Chapter 16)

12.3.4 "ARTIFICIAL" PROGRAMS

Some programs follow a more or less strict sequence of language content which is not based on normal stages of development of language but departs markedly from these, either (i) in the kind of language to be learned, or (ii) the medium of presentation.

1. The program uses teaching or sounds/syllables related to visual equivalents (rather than words, structures, etc.) ( )
   Example: the Association Method, Eisenson method
   Specify:

2. The program builds up speech units by reinforcement/imitation of basic vocalizing or speech sounds to arrive at a functional use of language (unrelated to normal stages) ( )
   Example: operant conditioning of language: Santa Barbara Project, Teachers' Manual
   Specify:

3. The program uses alternative symbol systems (see ALTERNATIVE SYMBOL SYSTEMS) which may or may not follow normal developmental stages in choice and sequence of learning of symbols ( )
   Example: the John Horniman language program

4. The program uses written language before spoken language or concurrent with it ( )
   Examples: Association Method; John Horniman program

12.3.5 ASSUMPTIONS ABOUT THE NATURE AND STRUCTURE OF LANGUAGE

1. Assumptions about the language to be learned:

   How explicit are these assumptions or concepts? ( )
   What system or theory, if any, underlies the program? ( )
   More than one theory or approach? ( )
   What explicit/implicit goals does the program set out to reach? ( )
   Specify:

   Possible foundations for program:

   a) Transformational grammar (Chomsky): base sentences, transformations; linguistic structures defined by this grammar (Example: Lee, Gray and Fygetakis) ( )

   b) Systematic but eclectic approaches to grammatical structure based on developmental considerations Example: Crystal ( )

   c) Use of eclectic, structural grammars as guide: Crystal, using Quirk et al "Contemporary Grammar of English" ( )

   d) Semantic approaches i.e. communication of meaning through language structures ( )
      Eclectic (based on child's experiences) Miller & Yoder; Nisonger program; Los Angeles County Autism program

   e) Semantic/conceptual i.e. linking specific stages in child's concepts in a Piagetian activity situation to linguistic structures Example: Bloom and Lahey ( )

f) Semantic/case grammar i.e. linking meanings to be acquired by child to theoretical expectations based on development of language or succession of learning as defined by case grammars such as Chafe ( )

g) "Communication" models, based on practical, functional considerations viz. autistic programs e.g. Santa Barbara, or on linguistic theories of language as discourse e.g. Halliday ( )
Specify:

h) Vocabulary Building (with or without other language abilities) viz. many applications of the Peabody materials ( )

i) Empirical bases for categories/stages of language to be taught, which do not conform to developmental stages or language theory ( )
Example: Guess, Sailor & Baer categories of language skills; Distar
Specify:

j) Functional Language: Language, meaningful or rote, acquired for specific adaptive or social purposes without reference to developmental/theoretical considerations ( )
Example: autistic programs; learning to request, labelling of common objects/situations, social formulas
Specify:

k) Undefined or haphazard mixtures of language skills or content, of spoken and written, etc. ( )
Specify in detail:

l) Phonological aimed at improving child's articulation or pronunciation of speech sounds/syllables or intonation as such, without reference to meaning or structures "Generative phonology" viz. distinguishing sets of distinctive features in the child's speech system and using these to develop systematic discrimination/use of sets of speech-articulation features (Rule-related approaches, viz. Compton, Ingram) ( )
or more eclectic, less systematized functional approaches to production of speech sounds/speech therapy (e.g. the production of verbalizing in first stages of many autistic programs) ( )
Specify:

NOTE: The above categories add more detail to the concept of STRUCTURE (CONTENT & SEQUENCE)

2. LANGUAGE - Receptive: Rote ( )
Comprehension ( )

Expressive: ( )
Reception/comprehension precedes expression ( )
(Example: Kent, Bricker & Bricker)
Reception/comprehension alternate or are simultaneous ( )

3. What is the sequence of receptive and expressive language in the main stages of the program, in terms of:

   vocalizing
   responding to/using speech sounds
   responding to/using intonation
   responding to/using syllables
   responding to/using words
   responding to/using words as requests/labels
   responding to/using sentence patterns
   responding/expressing at ROTE level (formulas, functional language)
   responding/expressing at MEANINGFUL level (i.e. flexible response to language; ability to produce a variety of language structures appropriately or to vary the same sentence appropriately)

   Specify:

12.3.6 REVIEW OF LANGUAGE COMPONENTS

Check whether the program contains these elements and what is the relative importance attached to each (a) in the whole program, or (b) at different stages of the program:

		A	B
Phonological:	experience in auditory perception/ discrimination/memory	( )	( )
	articulation/speech production	( )	( )
Syntactic/ Grammatical:	understanding or producing specific sentence patterns; using transformations such as negation, question forms, grammatical or morphological structures, e.g. tense, person, plural, preposition usage OR mastery of word level, phrase level, clause level Specify:	( )	( )
Semantic:	linking experience and language forms to express major categories and distinctions of the child's world, e.g. action, location	( )	( )
Lexical/ morphological:	extending vocabulary not only in size but "difficulty", complexity and width. Literal and figurative usages. Changes in word form relating to meaning and grammatical use.	( )	( )
Pragmatic:	real-life usages; ability to converse; exchange information or feelings; regulate one's own or other's attention/behavior; social and interpersonal usages and awareness	( )	( )

12.3.7 THE USE OF OTHER ASPECTS OF LANGUAGE IN THE PROGRAM
(reading, writing, spelling)

1. Place of reading in the program (a) as a medium/aid to learn spoken language, etc. ( )
   (b) as a product of language learning ( )

2. Place of writing in the program
    (a) as a medium/aid to learn spoken language, etc. ( )
    (b) as a product of language learning ( )

3. Place of spelling/phonics in the program
    (a) as a medium/aid to learn spoken language, etc. ( )
    (b) as a product of language learning ( )

4. Specify whether reading is
    graphic (letters, syllables, words) ( )
    auditory (phonemes, syllables, words) ( )
    word recognition ( )
    comprehension ( )
    audio-visual, i.e. hear-read or ( )
    visuo-auditory, i.e. read aloud ( )
    silent ( )

5. Is strictly controlled vocabulary, etc. used for above? ( )
    NOTE: This section relates to the significant overlap of some classroom language curricula with academics.
    This section also should be used to assess "reading/writing" in the more general non-verbal sense, e.g. "reading" Bliss Symbols and producing sequences of such symbols to express a message.

12.3.8 THE USE OF ALTERNATIVE SYMBOL SYSTEMS

1. Does the program depend on or make major use of an alternative (non-verbal) symbol system, e.g. sign, Bliss? ( )
2. Does the alternative system replace speech? ( )
3. Is the alternative system used together with speech? ("total communication") ( )
4. Is the alternative system used to build up verbal comprehension and/or speech? ( )
5. Does the program depend on use of a manual sign system? ( )
6. What kind of sign system is used (e.g. American Sign Language, Visible English, Paget-Gorman) Specify:
7. How "conceptual" is the sign system, i.e. specific signs stand for concepts which can be modified by additional markers/signs rather than each idea having its own arbitrary sign Example: Paget-Gorman sign system (concepts) ( )
8. How "syntactic/grammatical" is the system (i.e. are signs presented in English word order; does the system use signs for plural, tense, etc. attached to concept signs, e.g. specific sign for "gone" or "-ed" marker attached to a verb? ( )
9. Is there a combination of other media with sign, e.g. Bliss, pictures? ( )
10. What is the transition from sign to other media? (e.g. linking sign with picture, picture with word, sign with word, etc.)
    Specify:

11. Is finger-spelling used, as a separate system? ( )
or linked with signing? ( )

12. Is finger-spelling used, as a substitute for oral language? ( )
or together with language? ( )

13. What is the degree of concreteness of graphic symbols used:
Non-SLIP and "Premack" symbols ( )
Picture board ( )
Bliss Symbolism ( )
Printed words ( )

14. Are graphic systems (e.g. Bliss) linked with understanding speech? ( )
linked with using speech? ( )
linked with reading words,etc.? ( )
linked with sign language? ( )
Specify:

15. What levels/stages of learning are involved?
e.g. learning to "read" Bliss before learning to communicate ( )
e.g. learning 50, 100, 200 or 400 symbols ( )
e.g. learning to express functional ideas, requests, etc. ( )
e.g. learning to make statements ( )
e.g. learning to put symbols together in complex signs or statements ( )
Specify procedures/stages:

16. How are symbols/signs acquired:

By operant conditioning e.g. modification of gesture for sign ( )
e.g. association of symbols with thing or picture ( )
By building a coherent system of communication ( )
By selecting important concepts to teach ( )
By using functional situations, e.g. requests, needs (see Kent manual) ( )

17. How is the system elaborated? i.e. shift from acquiring receptive mastery to expression; from functional use of language to understanding that the language can be used to discuss concepts Specify:

18. How is the system elaborated so that the child becomes aware he is using language and can discuss other linguistic concepts in it, i.e. picture, word, statement, etc. (e.g. John Horniman)
Specify:

19. What is the "vocabulary" of the system; what are its limits in terms of its "dictionary" and the memory of the learner?
Specify:

12.3.9 SPECIFIC INSTRUCTIONAL PROCEDURES

1. Imitation: Motor ( )
Gesture/sign ( )
Vocal ( )

2. Rote response Receptive: e.g. trained to point to object ( )
Expressive: e.g. association of verbal label with object ( )

3. Meaningful response Receptive: e.g. discriminating between choices ( )
   Expressive: e.g. choosing between alternative responses ( )
4. Modelling of a linguistic response by teacher for child ( )
5. Modelling of response by peer ( )
6. Expansion of a child's utterance (grammatically; in terms of sense) ( )
7. Reduction of teacher utterance to meet child's needs ( )
   (e.g. "Bobby give ball" instead of "Bobby, give me the ball")
8. Modelled imitation, e.g. two teachers or teacher-child model a language interaction for third to respond to ( )
9. Organization of 2/3 way interaction, e.g. teacher talks to first child, he in turn signs to second to interpret; one child responds to teacher's question receptively (non-verbal) and another is asked to say what happened (expression)
   Specify:
10. Requesting behavior (teacher;child) ( )
    Negating behavior (teacher induces situation in which child refuses a request; indicates he is negating a statement) ( )
11. Forced-choice questions ( )
12. Substitution exercises/pattern exercises, i.e. developing a variety of examples of a sentence pattern ( )
13. Deciding on specific sequences of teaching/reinforcement, viz.
    using same preposition in relation to many different objects; ( )
    using different preposition in relation to same object ( )
14. Organizing "discourse" between teacher and one child; teacher and children in turn; between children ( )
    Specify:

12.3.10 GENERAL TECHNIQUES

1. Discrimination of objects/events and sets of equivalent stimuli ( )
2. Discrimination of responses to equivalent stimuli ( )
3. Establishing relation of stimuli to linguistic form ( )
4. Achieving correct sequencing of symbols ( )
5. Discriminating between patterns in a similar set of linguistic structures, e.g. variants of a sentence, and between different linguistic structures in appropriate ways ( )
6. Stages, in Kleffner's model of instruction, e.g.
   a) responding to language ( )
   b) learning to use language patterns at some level of complexity ( )
   c) applying and generalizing to real-life situations ( )
7. Use of direct instruction by teacher
   partial cueing of response by teacher ( )
   stimulating child to expand structures without direct reinforcement ( )
   helping child "initiate" by suitable cues and initiators ( )

8. Use of repetition/variation drills; individual/group ( )
9. Use of massed vs. distributed practice for effective practice and retention ( )
10. Sequential presentation of two related linguistic structures vs. simultaneous presentation/discrimination (cf. Ruder & Smith) ( )
11. Monitoring of sequence and transfer viz. whether teaching one structure first transfers more effectively to second structure, or the converse (cf. Ruder & Smith) ( )

NOTE: There are discussions of general and specific techniques in many texts, and specific examples in particular methods e.g. The Association Method. But for organized presentation of such issues, see Kleffner (1973); Crystal (1976); Ruder & Smith (1974) and other discussants in Schiefelbusch & Lloyd (1974); Santa Barbara manual.

12.3.11 SPECIFIC BEHAVIOR-MANAGEMENT STRATEGIES

1. Operant conditioning: Schedule of reinforcement
   Kind of reward
   Specific behaviors/skills reinforced
   Criteria for defining objective
   Criteria for defining mastery of task
   Shifts in schedule, reward, etc. to meet changes in child's learning Specify:
2. Use of differential reinforcement
   e.g. to 1 in 3 reinforcement so that child is prepared to work in a group of 3 children Specify:
3. Cues used: physical prompts (physical intervention); ( )
   physical prompts (placement, structure of stimulus in terms of colour, size, shape, etc.) ( )
   verbal prompts ( )
   gestures/signs ( )
4. Stages of shaping existing response
   e.g. encouraging vocalization/echoing; reinforcing specific characteristics, e.g. vowel; eliciting only specific sound required at appropriate volume and as appropriate response
   Specify:
5. Stages of fading procedures e.g. successive removal of cues or prompts; dropping out a part of stimulus; reducing volume, size, etc. differences
   Use of signing together with verbal commands or labelling
   Specify:
6. Objectives set:
   production of specific limited motor or vocal response ( )
   functional bits of language/sign e.g. "Hi", "Please" ( )
   request and negative request behavior, "Give me","Not want" ( )
   specific skills/labels ( )
   questions ( )
   conversational responses ( )

7. What is the relationship of the skills taught to general stages of linguistic development? Specify:
8. Evidence of organization of the generalization of responses to new situations?
9. Evidence (organization of) the extension of the language learned to the home and outside environment?
   Specify:

NOTE: A variety of sources, but see Santa Barbara Autism Dissemination Project Teachers' Manual; Lovaas (1976); Los Angeles County Autism Manual.

12.3.12 USE OF SPECIFIC CUES OR CODES IN THE PROGRAM

1. Use of colour-coding
   - Class and sequence of concrete symbol (Non SLIP) ( )
   - Class and sequence of words: Lea System; "Remedial Syntax" ( )
2. Arrangement/sequencing of symbols (Bliss Symbol board & method) ( )
3. Association of sounds and written forms (Association Method) and continuous (cursive) writing with continuous sound ( )
4. Pictorial representation of idea or sound, e.g. Rebus ( )

12.3.13 CONCRETENESS/ABSTRACTNESS IN LEARNING SITUATION MATERIALS

Is there a gradation of concreteness in stimuli and activity and is it relevant?

1. Use of real objects and events, activities within classroom or in environment, e.g. field trips, cooking, etc. Real life use of language/symbols/signs for labelling objects, etc. ( )
2. Use of functional language for requests, expressing needs ( )
3. Use of play activities (directly or indirectly) e.g. sand, construction, water, toys, etc. to promote labelling, request, comment ( )
4. Use of drama (dressing up by child; role-taking; role-taking in which teacher intervenes to promote role-play; interaction of child-child or teacher-child in dramatic play) ( )
5. Use of puppets by teacher to communicate, or use by child in free and then "directed" fashion ( )
6. Use of objects for labelling, matching, classifying, e.g. in a "treasure bag", matching objects ( )
7. Matching objects to other representations, e.g. real object to toy ( )
8. Use of actual slides of the object ( )
9. Matching slides of similar objects, events, etc. to objects ( )
10. Matching objects to pictures, cartoons, diagrams ( )
11. Using pictures to generate language, e.g. labelling, discrimination, classification ( )

12. Use of secondary sources, e.g. videotape, film, to stimulate language ( )

13. "Real applications" of language: structured (teacher-prompted) and later unrehearsed conversation/discourse ( )

14. Use of audio-tapes, records, etc:
    a) real life sounds, music, rhythmic activity (e.g. Peabody) ( )
    b) speech sounds, children's own voices and recordings ( )
    c) programmed materials and pre-selected tasks, e.g. Developmental Learning Materials tapes ( )

15. Use of structured sequences of language-question, request, prompting, development of increasingly complex sentence patterns ( )

16. Use of substitution drills, forced questions, or linguistically structured interactions (e.g. Lee Interactive program) ( )

17. Use of structured/programmed workbooks or materials; lesson or script by teacher ( )

18. Articulatory training, sound and auditory drills ( )

19. Reading ( )

20. Spelling/writing ( )

12.3.14 TEACHER ORGANIZATION AND CONTROL (For specific program or total program)

This section can only sketch out the very varied and complex ways in which a teacher organizes groups for teaching, uses time and timetables and arranges materials in order to promote learning. Much of what is involved in this aspect of the program is already covered by answers to previous sections. It may be of value for the teacher, or the staff together, to consider these questions:

1. Teacher initiates: commands, requests, asks questions, states ( )

   Teacher shapes and reinforces responses ( )

   Teacher initiates but less directly; organizes learning materials or situation to stimulate response (e.g. pictures, setting up a structured role situation, stimulating children to interact) ( )

   Teacher uses situation to encourage response (e.g. pre-school play situation, puppet, using activities and experience to stimulate language) ( )

   Children helped to initiate: given cues to initiate a conversation, cued to ask questions; given opportunities to interact in dramatic play, puppetry or within a small conversation group ( )

NOTE: See Sections 9, 10, 11 and 12.

2. Emphasis in program is on:
   Information processing/skills ( )
   Learning by experience/activity ( )
   or mixtures of these techniques ( )

3. Group/class organization of teaching:

   a) One/one (teacher/child) ( )

   b) One/one in group of up to 3 to 4 children (e.g. teacher works with one and keeps others busy; organization of learning for those not receiving direct attention of teacher?) ( )

   c) One/many in small group (3 to 4). Teacher alternates attention, instruction between children in turn ( )

   d) Group (up to 3 to 4); teacher stimulates interaction between children or organizes different roles, e.g. asking one child to ask a question and another to answer, etc. ( )

   e) Large group (more than 3 to 4), as above, (b) to (d) ( )
   Teaching/discussion using whole class, as above (c) to (d) ( )

4. Uniform presentation to whole class; demonstration of a task or piece of material by teacher; simultaneous activities similar to all, e.g. responding in sequence (different children) to same question or similar question (Distar); responding in chorus; answering question or repeating variations of a linguistic structure being learned or practised, etc.
   Specify:

5. Children work at same time on similar materials or tasks, e.g. workbooks, reading, practice ( )

6. What are the teacher's own preferred methods of
   control
   motivation (e.g. tokens, approval, task-mastery)
   focussing or teaching attention to task
   reinforcement (see Section 9 and 11)
   Specify:

7. Organization of teaching groups:
   by age ( )
   developmental level ( )
   language level or specific language difficulties ( )

8. Organization of specific groups:
   for language instruction (direct) ( )
   language experience/play, etc., e.g. pre-school ( )
   language games and practice activities ( )
   reading ( )
   spelling/writing ( )
   math, etc. ( )
   remedial work ( )

9. Organization of individual instruction
   for language work (direct) ( )
   language experience/play ( )
   language games and practice activities ( )
   reading ( )
   spelling/writing ( )
   math, etc. ( )
   remedial work ( )

10. Size of "small" and "large" groups
Specify:

11. Purpose of groups, as above: for materials used; centres worked in; kinds of learning; levels of learning
Specify:

12. Timetabling: variation between morning/afternoon activities etc.
Specific slots for specific activities during day, etc. ( )
Same timetable for all students in class ( )
"Individual" timetable or program for individuals or groups, etc. ( )
Length of time-slot activity? ( )

13. How is time and attention distributed between students and on what criteria?
How is time and attention distributed between different sizes and functions of group (Sections 14.1 to 14.10)
What do students do when not receiving teacher's direct attention or not involved in small-group interaction or conversation (practice/extension activities/play?)
Specify:

14. Does the same person teach the same children throughout, or do children rotate between different people?
Specify:

15. Do children stay in home class or "rotate" to different outside activities or to different teachers?
Specify:

16. How are space, storage and materials organized to facilitate learning? e.g. learning centres, teacher control of learning materials, child-initiated activities with materials because trained to do so
Specify:

17. Use of teacher's aides ( )
volunteers ( )
Specify:

18. Use of normal-peer instruction ( )
Specify:

PART II

THE EMPIRICAL DATA

13 The Methodology, Assumptions and Background of the Study

13.1 SCOPE AND PURPOSE: REVIEW

The scope and purpose of this report is to:

1. Describe the needs and characteristics of children who are identified as having disorders or delays of language, i.e. have severe communication disorder sufficient to ensure that they are placed and educated in schools or facilities for children with this variety of handicap;

2. Describe, analyze and evaluate as far as possible the varieties of provision made for these children in the way of programs, organization and teaching techniques. (See the full description excerpted from the research introducing this report.)

This study is not primarily concerned with the study of psychological processes, neurological or medical causes of speech and language pathology. It is concerned with summarizing relevant research on children with specific language disorder.

An attempt has been made to provide a context of relevant research in the Introduction. Definitions and criteria of language handicap have been discussed. The principles and concepts underlying the development, selection and use of programs for remediation of language delay and disorder have also been discussed, to provide a background of ideas against which the empirical facts on program and curriculum for children with communication disorder in Ontario can be placed.

This is primarily an educational study. It must, therefore, take account of the whole organization and content of the curriculum for the language-handicapped child -- how the child is identified for placement and grouping, the organization of teaching, staffing, and resources. Programs must be seen, as far as possible, in this context, not viewed simply as specific techniques of language remediation.

13.2 THE METHODOLOGY OF THE STUDY

The methodology of the study is essentially that of a survey. It describes present arrangements and program, providing summary data and trends on programs for children in the major educational facilities which could be identified and visited by the research team in the time and with the resources available. These are drawn from a background population which is probably between a quarter and a third of the elementary school population of the province. As noted later, 75 schools or facilities were directly visited and observed between March 1976 and the end of April 1977. Data were obtained on 487 children.

Identification of children was based on the perception and judgement of professional workers in the educational system. That is, the children were those judged by the participating facilities as having severe enough language/communication difficulty to be placed in a school, class, resource-program, or in a special facility such as a hospital or regional centre which claimed to provide, in whole or significant part, for those language difficulties.

Identification was based, therefore, on professional, administrative and essentially practical decisions, not on direct diagnoses of individual children though of course various assessments and diagnoses had been made by health and educational systems in placing children in these programs.

It is essential to emphasize that the children were identified through their programs and observed in their programs, since the reporting of the variety of programs was a main objective of the study.

(1) At the first stage, board of education, school or agency officers responsible for the special education or treatment of the relevant group were asked to identify their special programs, or identify appropriate children within programs if the programs were not entirely devoted to language disorder. They were given provisional definitions of children with specific language disorder and asked to exclude, at the first stage, children such as purely mentally-retarded, cerebral-palsied, hearing-handicapped, or having only speech disorder. A provisional criterion of two to three years' gap between language level and level of general mental functioning was given as guideline. In one county an alternative criterion of children having a discrepancy of 30 I.Q points between verbal and non-verbal intelligence scale scores was accepted as a working alternative.

(2) At the second stage, the research team met the professional group -- the research committee of the board, the special education officers, the principals and/or staff of agencies -- and discussed in detail the kinds of children perceived as having specific language handicap within the terms of the study. Programs or children were included or excluded by comparison and contrast with criterion. At this stage, there was reference to principals and/or teachers for their judgements. The arrangements varied from locality to locality, but in several instances all the teachers concerned with language programs were brought together for discussion with the research team. The participating facilities were asked to "over-include" children, i.e. put forward all children who appeared appropriate, including borderline cases.

A brief checklist guideline, indicating the signs to look for in children with expressive or receptive language difficulties, was issued.

(3) At the third stage, the research team checked with principal and/or school or unit staff once again to determine whether children fell within the limits of the study. Even at this stage, decisions on exclusion could take place.

The study therefore presents a picture of language-handicapped children and the programs available for them as they existed in their actual variety in 1976-1977, as agreed between the research team and the education system, not arbitrarily defined by restrictive selection criteria or tests imposed by the research study.

In a real sense, the process of negotiation between research team and the system studied established who and where language-handicapped children were.

13.3 THE INSTRUMENTS AND TECHNIQUES

The purpose of the study was to collect information by (1) report, (2) observation, and (3) from records, and to classify, compare and analyze these observations. It was presumed, correctly, in the light of later experience, that there was a great deal of variety and heterogeneity of handicap under the title "communication disorder". Also, that there was a considerable variety of kinds and levels of program.

Since the information was collected from several different sources and was defined, to some extent, by different criteria, it is at times only partial. It is by definition information which can be fallible. Errors may be introduced in questions posed, in interpretation by the respondent, by possible errors or conflation of information in coding. A cardinal principle of this study was therefore that the data should be gathered from as many different sources as possible, to permit of comparison and cross-checking.

The main sources of information were:

13.3.1 Structured interviews with the principal or other professional person in charge of a school or facility. These interviews gathered information on the administrative/statistical background of the program: the number and distribution of children; methods of intake and classifying children; staffing, experience and qualifications of staff; and the organization and goals of the facility. The main instrument was a questionnaire, Schedule 2/1. Some questions on the organization of the individual classroom or program were also asked on Schedule 4/1 (Teacher).

13.3.2 Structured individual interviews were carried out with the teacher (or teachers), therapist, child-care worker or whoever was directly responsible for organizing and teaching the child's remedial program.

These were based on Schedule 4/1, which covered qualifications of respondent; a definition of program goals; preferences for particular teaching approaches; the organization of group and individual instruction; use of techniques, materials, resources and space; and the choice and use of specific remedial programs.

This interview with one research worker normally took about an hour and a half. The schedule was completed by the same teacher(s), who also completed Schedules 1/1 and 3/1 on each individual child identified as participating in the study and found within the program. Schedule 4/1 is the main source of data on programs.

13.3.3 The research assistants, normally working two together, also spent at least a morning or afternoon observing each classroom or facility, depending on the number and complexity of programs in that school or facility and the number of children in each program. Normally, at least two days was spent on each facility. In a large program such as Bedford Park, more than three weeks was spent in interviewing and gathering data. The research workers not only gathered information by interview but observed the interaction of teacher and child. They wrote detailed descriptions (forming the basis of case-studies in selected instances reported later) of classroom space, organization and grouping, variety and use of materials and related observations. It should be emphasized that at no point were teachers, as such, evaluated.

13.3.4 Additionally, the two research workers working independently observed five-minute samples of the interaction between teacher and specific children, observing one child at a time (though the whole context of the interaction and the contribution of children other than the one being directly observed were also noted). After much discussion and trial, it was decided to base the observation simply on the interaction of teacher with child (see Berry (1976)) and not on sampling of all the child's behaviors in the unit of time. Complex forms of recording were originally drawn up, but experience indicated that the most practical form of coding was simply in terms of (1) who initiated an interaction and (2) overture or response in the form of: Question, Command/direction, Reinforcement/ encouragement, Directions on carrying out some action, Statement or Explanation. With the time and resources available, it was not possible to do more than review these protocols for general consistency between pairs of interviewers (which was high) and content. It would be of interest to relate the analysis of the content of these interactions and the specific classroom program or other aspects of organization and teaching approach.

Even cursory review revealed the fact (based on previous research, Flanders (1970)), that teachers normally initiate and control teaching interactions. (Flanders'"two-thirds rule") This would be expected when there is an emphasis not only on using language but actively teaching language. There were, however, variations between classrooms and between types of program. (1) Observation of a Distar language program confirmed that the interaction consisted of a highly prescriptive and repetitive sequence of specific questions by the teacher and specific responses by individuals or group. (2) The

Assocation Method used by aphasic classes in the Belleville School for the Deaf is by its nature highly structured linguistically, sequenced, and repetitive so that interaction between teacher and child is clearly defined. (3) Observation of a gym program in a school for language-disordered children revealed a very high level of direct demonstration, command and directions by the teacher in charge of a large group (which also had other teachers present) but with little in the way of language response by children or interaction between children themselves, except in motor response. These direct observations, like the recording of classroom floor plans and the listing of materials, served as a confirmation of the content and style of the program or the variety of content within a single program.

13.3.5 The teacher of the program or person in direct contact with children was also asked to complete Schedules 1/1 and 3/1 as far as possible on each child identified as entering the study.

Whereas Schedule 2/1 related to the total facility (principal) and Schedule 4/1 related to each individual classroom program (teacher), Schedules 1/1 and 3/1 described the individual child. Schedule 1/1 describes: age, sex, father's occupation, ability level and the diagnostic category in which the teacher agreed the child best fitted, as well as questions on the age when the child was first placed in the program, records available, information on tests of sight and hearing if available, the number of diagnoses and of placements for the child and data on assessments. This is basic data on child, just as 2/1 is basic data on background of program.

13.3.6 Schedule 3/1 was a checklist of language skills, receptive and expressive, which research suggested represent stages of language acquisition not displayed by children with language handicap. This involved judgements by the teacher based on experience of the child and is not a direct language sample. In the light of experience, this schedule might well have been augmented or replaced by a checklist such as the Bzoch-League or Washington scales, but main concern was not to overload the teacher, already committed to a heavy schedule of individual interviewing.

13.3.7 Schedule 1/1 is essentially the basis of the description of the needs and characteristics of children, augmented by data from Schedule 3/1 on the language performance of handicapped children. These data were classified by age, sex, socio-economic status and ability level where available, and by "diagnostic category".

As noted later, data on socio-economic status and ability are not always available. There is a considerable variety and heterogeneity of kind and level of handicap within each diagnostic category, especially that recorded as "language delay and disorder" (as distinct from "aphasia" and "autism"). A crucial finding in this study was the repeated evidence for a great variety of handicap within the heading of "children with communication disorder", even when consideration is strictly limited to those claimed to have specific language disorder. To analyze these groups in more detail, however, would have led to smaller and smaller specific groups of dubious statistical significance. It would have forfeited statistical stability as well as obscuring general patterns in a plethora of detail.

It is thus not practicable to relate individual diagnostic categories and other individual characteristics to specific categories in program and kinds of organization (Schedule 2/1 and especially 4/1), viz. how many children described as "autistic" have particular kinds of program or material available to them. Essentially there are two levels of discourse in this study: the individual child and the individual school program.

13.4 THE BASIS OF ANALYSIS OF DATA

The logical basis (as well as the most practical for the educator and administrator) for description and analysis of the program is the classroom unit and the school-administrative context of which it forms a part. The "autistic" or "aphasic" diagnostic groups may be found in a variety of facilities and programs (classes, school, hospital); the "language disordered or delayed" are found in all programs, though more usually in the programs based on regular elementary school classes, which form by far the majority of the facilities studied.

Evidence from the study indicated which groups of children were likely to be found in particular kinds of individual class/program and in turn which of these classes are typically found in a particular school or facility type. The comparison of type of class and type of school/facility is found in Chapter 15.

13.4.1 Classification of Individual Children

Information on individuals from Schedule 1/1 was classified and analyzed by categories: (1) sex; (2) age; (3) socio-economic status; (4) ability level; and (5) diagnostic category.

13.4.2 Classification of Programs

Schedules 2/1 (school) and 4/1 (program) were analyzed by school type. These are in many respects large, crude classifications but make administrative sense. As they emerged in direct description and analysis of their function, they are:

Regular (practically all Elementary but 1 or 2 Secondary) school classes or programs (Education)

Hospital settings where educational classes or specific educational programs are found (Health)

Regional Centres: special residential diagnostic and treatment centres (Health)

Developmental Centres: facilities for preschool and young severely mentally retarded/developmentally disabled children (Education, Community Services)

Residential Provincial Schools These essentially refer to the Ernest Drury School for Hearing Handicapped, Milton and the School for Hearing Handicapped, Belleville, with programs for groups of aphasic children or individual language disorder

Preschools These are not regular preschools but preschool/nursery/clinic facilities for young children with behavioral, language and other difficulties or special preschool programs for children with language delay

Trainable Mentally Retarded Schools Metro Toronto Board or Board of Education

Other Residential Provision This essentially refers to a residential facility for adolescent autistics, i.e. Kerry's Place (Health, Education)

Other Speech and Language programs; a residual category covering resource services by speech pathologists within a board of education setting and other special clinical/educational facilities, e.g. The Child Study Centre, University of Ottawa (Education)

Mainly Autistic programs covered classes organized by boards of education and facilities such as the McHugh School, Ottawa (Education)

Mentally Retarded Language-disorder or autistic were also studied in Regional Centres for the Mentally Retarded, hence likely to be severely retarded and adolescent.

The mentally retarded facilities provide interesting comparison and similarities to the language groups drawn from other facilities. Research on language remediation suggests that examination of their programs is relevant. They are referred to for comparison but not dealt with in detail in the analysis.

More detailed discussion is given as introduction to the chapters on program.

13.5 THE ORIGIN AND DEVELOPMENT OF RESEARCH INSTRUMENTS

The basic schedules (1/1, 2/1, 3/1, 4/1) were devised to obtain a wide variety of information, from several viewpoints, relating to individual children, their language responses, and the resources organization and curriculum available for the education of language-handicapped children.

13.5.1 Questions on programs were modelled in part on ideas drawn from "Formative Curriculum Evaluation", Weiss et al, Ontario Institute for Studies in Education (1972) which sets out a framework for describing and evaluating curriculum goals, content organization and teaching resources by classifying and ranking teacher responses. The original procedures set out in this manual for choice of content were only in part appropriate to the much more detailed concerns of this study. The procedures for ranking teachers' choices turned out to be too complex, detailed and impractical for this study. "Formative Curriculum Evaluation" refers essentially to standard curriculum areas found in the elementary and secondary schools.

13.5.2 Questions in 4.1 on the content of program were also inspired by curriculum theory as described by Gagne, i.e. the analysis of learning in terms of distinctive processes and skills: (1) verbal, (2) problem solving (science, etc.), (3) manipulation of symbols (e.g. math.), (4) motor skills, (5) learning of values. Also by (a) the distinction between learning by "information processing" (skills) and "activity and experience", and (b) the stages of learning which range from initial exploration of the task to practice. These conceptual approaches were used to classify teaching styles or emphases in the program.

13.5.3 Concepts of content and sequence in remedial language programs and teaching approaches were drawn from sources in the literature, such as Schiefelbusch and Lloyd (1974). For a full and detailed analysis of these concepts, the reader is referred back to Chapter 12 in the Introduction.

13.5.4 The most important source and validation for the schedules, however, was the principal investigator's professional experience of the full range of education, including all varieties of special education, in his role as inspector of schools (administrator/consultant/evaluator of programs) in Her Majesty's Inspectorate of Schools (England and Wales) over 11 years, 1960-1971; experiences of observing schools and (on one occasion) evaluating a small school system (elementary and special education) in Ontario between 1971 and 1974 while working as Visiting Professor in the Department of Special Education, Ontario Institute for Studies in Education, and while working on the Cyclic Review of the Primary and Junior Curriculum, Ontario. The principal investigator had prepared position papers for a national conference in Wales (1970) on autistic children and children with language disorders.

Experience in devising and using such questionnaires was also gained in planning and carrying out the field work for the massive survey of "primary education in all its aspects" conducted by the Central Advisory Council for Education, Wales, for its report "Primary Education in Wales", H.M.S.O. 1968, to which the present writer acted as Secretary, 1964-1967.

Sources for questions on language and individual psychological/social factors were also based on the present writer's experience as clinical/educational psychologist, and present experience as director of a centre for children with educational disabilities in which individual children with learning and language disabilities are assessed.

Other sources for ideas include Krasner's analysis of the tasks and processes in the elementary classroom.

The time-line of the study did not allow of full preliminary trial and item -analysis of schedules.

Several of the items in the schedules were experimental and proved in practice to be too complex or verbose, required specific information not readily available by teachers or the use of modes of interpretation or classification which were difficult for them. These items were discarded as experience revealed they were not contributing, or were shown up as deficient in coding and analysis. The pattern of statistical analysis in following chapters reveals the meaning and validity of the remaining items.

Some information requested from teachers on language performances of children proved too detailed or complex to obtain, and these items were omitted in the stage of coding and analysis. Schedule 3/1, in particular, proved to be time-consuming for teachers and is probably the least satisfactory.

13.6 THE ADMINISTRATION OF THE INSTRUMENTS

The schedules were administered by a team of three research workers who were directed to obtain specific responses to coded questions on schedules but also record fully all information offered to them. They became adept in administering long and complex schedules in reasonable time allocations (such as 1½ hours for schedule 4/1). They were also prepared by discussion and instruction to observe and note in detail the room-plan, group organization, materials and resources of each room/program they studied. They were not professional speech pathologists, hence were not asked to make professional judgements on details of children's language handicaps or on fine details of specific remedial programs. They were not professional educators or evaluators, either, and this in fact was not their role. They became, however, skilled observers and recorders of objective information and of judgements conveyed to them, i.e. had the advantage of being competent "neutral" observers without educational or professional prejudices or preconceptions. A strength build deliberately into the procedure was the team approach whereby at least two workers operated simultaneously in the same school or program and in most instances duplicated their observation of a classroom or child; this also permitted the efficient division of labour in interviewing a principal, also collecting data from children's records while a third research worker began individual interviews with teachers.

On the other hand, the survey technique, detailed as it is, did not at this stage permit the detailed long-term or repeated observations of programs and classroom interaction over a period of weeks and months described by, for example, Krasner. This can lead to powerful classifications of classroom processes and practices. (See also Farnham-Diggory (1972)) Essentially, the observation and analysis of programs had to be on one occasion, i.e. a "photograph" of the program rather than a "movie".

13.7 OTHER TECHNIQUES OF RECORDING

A small number of programs employing specific techniques (Bliss symbols; behavior modification approaches using the Distar or related material in classroom and home; the Association Method for aphasics and a peer teaching system) was recorded on brief segments of video-tape by the research team and form part of the support material for this report and for the Advisement to the Ministry which is related to it. The principal investigator also took a number of colour slides of episodes in specific programs (autistic, hearing-handicapped, other) in the U.K.

13.8 RECORDS OF INDIVIDUAL CHILDREN

13.8.1 In addition to structured interviews, observation of classroom programs and materials and direct samples of children's interactions with teachers, the research workers obtained permission from participating facilities and releases from parents to obtain information from children's individual case-records relating to diagnostic category, handicap, ability and attainments, previous diagnoses and placements and available educational, psychological and medical information. This was carefully coded to conceal the identity of the child and has been used only in tabulations in statistical analysis. Much of this information could, with suitable anonymity, be used at a later stage in more detail to tease out possible association between handicaps, types of placement and types of program. (Though small numbers in groups and the heterogeneity of program and children make this impracticable.)

13.8.2 Cautions on Completeness and Reliability of Data

All possible precautions were taken to record all required responses or to help teachers interpret and record appropriate answers. There is, however, as in all practical surveys, a proportion of missing or obscure data due to respondents not answering a question or answering in ambiguous ways. Or data in a child's record is frequently missing. This means that not all data are necessarily available on all children for all teachers or all programs in every detail. The considerable mass of information available, however, ensures that gaps produce random rather than systematic effects on the statistical analyses and on interpretation. Where there are specific effects, e.g. one or more important programs or classes omitted, this is noted.

Note is also made of specific items of information or bases for analysis (e.g. socio-economic status) where the number of missing cases is large enough to affect the interpretation of results.

It was noted, in particular, that children's case records varied very much in comprehensiveness, effective organization and detail from system to system and school to school. In fact, this area of information, which might have been expected to be the easiest to use and the most standard, presented the greatest difficulties, since the research workers were not able to use their own schedules and were restricted by the format of the records. They made a practice of asking appropriate professional workers for extra information and confirmation on such records but were not always able to fill out missing or confusing details.

The "goals and objectives" recorded in the study were based in part on those enunciated by the Ministry of Education (e.g. in guiding the recording and coding of principal's responses on Schedule 2/1) and in part were a coding of the free responses offered by teachers in describing their aims.

13.9 THE "MAIL ORDER" SAMPLE

A sample of 47 facilities (mainly elementary school programs) was contacted by mail, using the full range of four instruments but in suitably modified form. These facilities were selected for this treatment because they were too distant to visit, or the number of children involved did not justify the use of time of the whole team. An analysis of the data from this sample is used to confirm briefly the consistency of description of program described by the main sample.

13.10 THE PARENTAL SURVEY

A sample of 28 parents of children with language disorder included in the survey (autistic, aphasic, language-disordered and mentally retarded) was visited and interviewed in their homes in June-August 1976 by the research team. The schedule used is reproduced in the Appendix. A chapter is devoted to parental views.

13.11 SPECIFIC PROGRAMS FOR LANGUAGE-HANDICAPPED IN ONTARIO

The study was committed to examine specific programs for language-disordered children in Ontario, including:

The Thistletown Regional Centre (autistic/language-disordered)
Bedford Park Public School program for language-disordered (a Metro Toronto provision)
The McHugh School, Ottawa (autistic, elementary program)
Belleville Regional Centre for Hearing Impaired (aphasic classes)
Kerry's Place, Clarksburg (residential unit for adolescent aphasics)

The program at the McHugh School is a project which has been examined and reported on by a research team based in the University of Ottawa. Their study, based on a contract with the Ministry of Education like the present study, has been submitted.

The Belleville provision of instruction, consisting of the Association Method to classes of aphasic children, is also a project which is under review by the Ministry of Education.

In addition, the present study was requested to make contact with the research study (contract with the Ministry of Education) being carried out on the teaching of twelve severely-handicapped autistic children by Dr. David Hung, which has also been reported to the Ministry of Education. This research study, based on the Rotary School, Yonge Street, Toronto, was visited and observed by the principal investigator, who also discussed with Dr. Hung. It was, however, decided that there was no point in attempting to describe or replicate the extremely detailed analysis of individual response and task/skill analysis available in this particular study; it fully speaks for itself.

As far as possible, case-study reports were prepared, describing the organization and nature of the programs in the specific facilities listed. These are given in a separate chapter. These programs were, of course, included in the statistical analysis.

13.12 ALTERNATIVE PROGRAMS AND INNOVATIVE APPROACHES

In addition, the present study was requested to indicate, as far as possible, interesting or innovative programs in Ontario. This is done briefly later. It should be noted that mention of programs as having unusual elements of interest does not mean that programs which are not mentioned are uninteresting or lack value; no such evaluation is intended, nor could it be properly carried out within the terms of reference of the present study.

Provision was made for a limited number of visits to other countries to observe programs for language-disordered children which might be of particular value for study by the Ontario educational system.

Several facilities for the autistic and severely-language-disordered child were observed in Britain in the fall of 1976; the study tour (which visited 15 schools or individuals in 3 weeks) also gave opportunity for discussion with major authorities in the field of research, training institutions and important voluntary associations.

Visits were made to the United States on 3 occasions: to the Department of Speech and Language, Northwestern University, Evanston, Illinois, a major centre of research and teaching including authorities such as Dr. Laura Lee; to the Wayne County, Michigan mental retardation system which comprised provision for autistic children; and to centres in California concerned with study and research on autistic individuals such as the Santa Barbara Autism Dissemination Project, Camarillo State Hospital, Ca. and the Neuropsychiatric Unit, Medical School, University of California, at Los Angeles.

Conclusions from these studies and reviews are presented in a separate chapter.

It will be observed that the variety of kinds of information and sources of information presented in this study fulfill the basic philosophical and methodological commitment -- that possibly fallible data should be observed and interpreted from several different points of view to obtain a reasonably comprehensive and valid interpretation.

14 The Characteristics and Needs of Children in the Study

14.1.1 The Background of the Study

Information on the characteristics and needs of children was based on reports from teachers and others in direct contact with the children and was based on structured interviews carried out by a research worker. The instrument used was in the main Schedule 1/1 but additional information was gathered from direct review by the research team of children's medical, psychological and educational records (insofar as these were available).

The primary data were gathered from 75 schools and other facilities and related to 487 children in total who were also observed at first hand in their programs and whose teachers or therapists were interviewed while working within the program.

This chapter discusses the number and distribution of various handicap groups which share language disorder; factors of age, sex, intelligence level, socio-economic status and diagnostic category of individual children. Additional questions were asked about age of diagnosis and placement, numbers of placements, discrepancy between verbal and non-verbal ability levels or chronological and language age and other questions which help build a description of disordered children in the study.

14.1.2 The Definition of the Language-Disordered Group

It must be emphasized that all children included in the study and all children described here were defined and selected by those responsible for their assessment and education as having significant handicaps in language/communication or being members of special facilities or programs for children with language/communication disorder. A further selection was made, in analysing the data, of the children with specific language handicaps, as described later.

The most obvious fact is the heterogeneity and range of handicap in the total group. As pointed out in the Introduction to this report, these handicaps include or overlap with: hearing-handicapped, educable and trainable mentally retarded, cerebral palsied and emotionally disturbed groups.

These data confirm the conclusion of Morehead (1974), Rutter and Martin (1972), Crystal (1976) and several other authorities that the language-handicapped group is very variable and heterogeneous.

These are actually the range of children found in the programs for language-disordered children which were studied. It should be recalled that the study focussed on investigating and reviewing programs for language-handicapped. For example, in order to examine the Bliss Symbol program, it was necessary to study classes for the cerebral-palsied since this program was first developed for use by this handicap group and has since been expanded to other handicap groups. Samples of children with severe mental retardation, from developmental centres and regional centres for the mentally retarded, were included in the main group because a variety of language programs has been developed for the mentally retarded, ranging from intensive language programs to sign language and "total communication"; many such programs are more relevant to children with specific language disorder (See MacLean & Yoder (1972), Schiefelbusch and Lloyd (1974)). Some of the most interesting "total communication" programs and some of the most effective organization of language teaching programs and applications of the techniques of the speech pathologist are seen among the mentally retarded groups in Ontario.

14.1.3 Comparison of Total Group, Specific Handicap and Language-Disorder Group

It is useful to examine the characteristics of the whole group to find what common factors there may be in language handicap, whatever the diagnostic handicap label. Nevertheless, for the purposes of this study, the groups with specific language handicaps (as so labelled) are identified and studied separately in detail.

It is of value to use the whole handicap group (referred to as the Total Group) as a reference group with which to compare the groups with specific language disorder (autistic, aphasic and language-disordered/delayed), referred to as the Language Disordered Group.

It is also possible to make specific comparisons between the different handicap groups forming the Total Group to bring out comparisons and contrasts with the language-disordered groups. Thus, there is provision for internal comparisons and tests of consistency or difference between the different handicaps contributing to language disorder.

14.1.4 The Composition of the Language-Disordered Group

The specific language disorder group comprises:

Autistic (49), Receptive Aphasic (4), Expressive Aphasic (52) and Language-Disordered/Delayed (153). This is a total of 258 or 52.9 per cent of the Total Group.

The percentages of various handicaps cannot be taken as estimates of prevalence. They are not based on representative or random sampling of all programs or of all children in Ontario who might be included in those handicap groups. They reflect, rather, the kinds and number of classes or programs studied, and the relative proportions of children with various handicap labels and also with significant or severe language handicap found within these selected classes.

In addition to a group labelled simply "Language-disordered/delayed" (113), there was a heterogeneous group of children (40) with a variety of specific descriptions. These included children using only gesture (4), limited response to auditory and visual stimuli (7), poor receptive language (1), can only vocalize (2), only single-word utterance (1), restricted vocabulary (3), 2-3 word sentence (1), poor syntax (4), poor articulation (1) and unclassified but severe difficulties (10).

These are added to the main group of 113 to form the whole group of language-disordered (153).

The above group illustrates the variety and heterogeneity of level and pattern of handicap even within the language-disordered group; the point emphasized by research and by authorities such as Eisenson (1972), Morehead (1974), Griffiths (1972) and Crystal (1976), among others.

14.1.5 Fallibility or Omissions in Recording Data

The full recording, and the statistical consistency of data which were complete and reliable, confirm that the actual procedures of data-gathering were efficient. Two or more research workers were always available to check on one another's procedures and record-keeping.

The nature of the data, however, reflects the organization of the system from which the information was drawn as well as the characteristics of individual children and groups. Some data are well recorded, in detail, by the school, facility or program; other data are not. In general, the records on individual children kept by school or class varied considerably in their comprehensiveness and reliability. They did not have common factors, except age and sex of child; many records were organized in unsystematic ways; data were not recorded, or not transferred from other resources, or were simply not available. There is no standard minimum of information, nor of organization of the child's record. Medical, psychological and educational information may be separated from one another, or recorded in ways which do not allow of ready, standard comparison of data between individual children. A recommendation made here is for the introduction of a standard form by the Ministry of Education for all handicapped children who are placed in any special programs or treatment. This would contain a required minimum of information on handicap classification, ability level, age, sex and record of previous assessments in standard form, with dates and decisions on placement in programs. This could resemble, with improvements, the records known as #2 Handicapped Pupils (or 2 H.P.) and #3 Handicapped Pupils (or 3 H.P.) formerly used by the Ministry of Education, United Kingdom. An augmented and systematic Ontario Student Record would also serve this purpose.

The reader is cautioned, in reviewing the present statistics, to set them in the context of the information available and its reliability. In particular: information on the intelligence or developmental level of the individual was recorded by the school/program in 49 per cent of cases; information on socio-economic status (Blishen Scale), based on knowledge of the father's occupation, was recorded in 30 per cent of cases.

It was considered, from the consistent relationships within the data, that dependable conclusions could be drawn from a 50 per cent sample (I.Q. score) and cautious conclusions from the 30 per cent sample such as the record of socio-economic status.

By contrast, the diagnostic categories established by the research workers working directly in contact with the individuals reporting on program were recorded in 96.4 per cent of cases in the present sample.

Some other categories, such as age of initial diagnosis, birth history, records of special tests such as neurological tests or of discrepancy of verbal and non-verbal ability, are poorly recorded in school programs (80% or more unrecorded). There appear to be reasons for this: The data are recorded elsewhere (or may not have been reliably noted at all); the school may not see such information as relevant or may not, in fact, be able to interpret it; only a small minority of children may have had the condition or test in question. On the other hand, when it can be demonstrated that children have been placed in a special class or facility, have been assessed more than once and are likely to have had more than one placement (all facts which emerge from the study and are discussed below) it is strange that basic facts such as I.Q. level, reading grade level, or the discrepancy between verbal and general/non-verbal abilities are not consistently or fully recorded.

Attention is drawn, in following discussion, to questions which appear to be of questionable or limited value because the data were not available for recording or appear liable to misinterpretation.

The observations of the research workers and entries on questionnaires were coded. Full analyses of all coded data were carried out automatically by computer, to give frequencies, cross-classifications and estimates of statistical significance. It was necessary, however, to recompute much of the data in order to focus on the relationships between the actual cases without including the "omitted or unrecorded" data which distort the relationships of interest. Most tables have been thus re-organized, or the categories combined to illustrate relationships, or permit of statistical analysis.

14.2 THE MAIN VARIABLES

14.2.1 Numbers and Prevalence of Language Handicap

The number and proportion of children with language disorder/delay in this study have been noted. They are: autistic 49 (10.1 per cent), aphasic 56 (11.5 per cent) and general language disorder/delay 152 (31.3 per cent). These are percentages of the Total Group, with various handicap labels but all with significant language difficulties meriting placement in a special program. The total of the above is 52.9 per cent.

It is not possible to use these figures as estimates of true prevalence of language disorder, or its subgroups, in the general school population. The study was, as noted, not a random representative sampling of all possible language-deficient children, calibrated by means of a common criterion or assessment and related to good estimates of the parent school population of the appropriate age. The study had to be based on selected groups, already identified and placed in special programs of some kind for the language-handicapped. They were identified by the professionals responsible for their education/treatment on a variety of criteria. The intent of the study was to reduce the variety and range of these criteria, but it was evident that different schools/systems had different criteria.

It is not clear what reference group should be used in calculating any present "guesstimate" of prevalence. Aphasic children in the study were drawn from the whole of the Metro Toronto area insofar as the membership of the Bedford Park program is concerned. They were also drawn from the aphasic unit at the Belleville school for hearing-handicapped, which draws from a large north and eastern region of Ontario. Only two of the metropolitan boroughs, Etobicoke and Scarborough, were individual participants in this study but they also have additional provision in their own schools for language-handicapped children. This is quite substantial in the case of Scarborough and may contain aphasic and autistic children. By contrast, the Metropolitan Separate School Board contributed a sample of severely language-handicapped children who are drawn from the whole of the Metro Toronto area. For the autistic groups, reference points were the Thistletown Regional Centre, which draws on a large region around Metro Toronto, and isolated programs, such as the McHugh School, Ottawa and the classes in Guelph (Wellington) and Kitchener (Waterloo). Other autistic groups were drawn from the adolescent residential unit, Kerry's Place. Autistic children were also found, labelled or unlabelled, in other programs, e.g. the Hamilton city provision. It is therefore difficult to fix on any clear reference population for the various groups: autistic, aphasic and general language-disorder/delay.

However, the reference populations for this sample are assumed to be those of the boards of education and facilities which contributed to the direct study of children with language handicap: Metropolitan Toronto; Hamilton; Ottawa and Carleton; Peterborough; large and small counties in southern and eastern parts of Ontario; and southerly parts of Northern Ontario (e.g. Sudbury). This is in addition to the special regional facilities listed. The reference population could amount to between 1/3 and 1/2 of the elementary school population of Ontario. The population figure is 662,432*.

* Toronto City and Boroughs (Public Schools)	238,301
Toronto Separate School Board	92,915
Other Boards in the study	331,216

The school population of the participating areas in 1974 was calculated from an official Ministry of Education source (Directory of Education 1975/76). The total figure for children with specific language handicap (including autistic and aphasic) in the present study is 258. It was decided to recalculate the proportion using only the numbers for children of elementary school age in the study (i.e. below 14 years of age) an estimated 210 and comparing these with the elementary school population derived from the above source. The rationale for this is that the majority of the sample in this study are of elementary school age and that all regular school language programs, except for one or two, are based on elementary schools (see analyses in Chapter 11 on Programs). On this basis, the "prevalence" of language disorder within the conditions of this study is 210 out of 662,432, or 3 per 10,000. This appears to be a low estimate, but is subject to all the assumption and errors of estimate above.

What can be concluded is that there is a significant, even though small, proportion of children who are identified by the school system as suffering from a variety of language handicaps sufficient to justify placement in special classrooms or treatment by special programs in the regular school or in specialized facilities. The 258 identified here form a fraction which is consistent with the estimates of 1 per 1,000 or less of specific language handicap consistently confirmed by surveys of complete age-groups (summarized by Rutter & Martin (1972)).

This, however, is likely to be a minimum estimate. As pointed out in the Introduction, any estimate or prevalence must rest on the particular criterion for handicap which is adopted. If children who are still lagging significantly at Stage VII, from 6 to 13 years of age (Crystal), i.e. whose mastery of linguistic structures is beyond the 4½ to 6 year level but still immature or well below the norm for their age, are viewed as having a degree of language handicap, then the estimates of prevalence would rise considerably. There is a marked overlap between children with "language handicap" and the more prevalent children with "specific learning disability". Klasen, Golick, Vogel and others have demonstrated the strong relationships between speech/language delay and specific learning disabilities in the fields of written language. (See also a recent contribution by Wallach (1977))

14.2.2 The Proportion of Autistic Children

The proportion of children labelled "autistic" in this study is small: 49 or 10.1 per cent of the Total Group (all handicapped) or 18.7 per cent of the more narrowly-defined Language-Disordered/Delayed group of which they form part. This finding suggests that the present data are consistent with previous surveys and so are dependable. The estimated proportion of autistic children of school age is very small: 4 per 10,000 in the surveys is usually cited (Lotter (1965) and similar surveys in the U.S.A. and Sweden). The Ontario Autistic Society on this basis estimate the total autistic population in Ontario (0-19 years) as 1,335 (Bloomfield (1977)). Prevalence estimates such as the above suggest that the autistic group forms one third of the total language-disordered group. In the present sample, autistics form one sixth (18 per cent) of the total language disordered group of which they are part. If not included with the language group, the autistics are proportionately 25 per cent of the language-disordered group.

If the estimate of 4 per 10,000 is taken as a basis (a distinctly liberal one, which by Lotter's original definition included not only the "core" autistic but autistic-type children) the school programs for autistics in Ottawa, Wellington and Waterloo counties, for example, may (1976/7) contain only half of the estimated autistic population.

The present sample of autistics (49) is large enough to enable some conclusions to be reached about its characteristics, in the following analyses.

14.2.3 The Proportion of Aphasic Children

There is restricted evidence on the prevalence of "aphasics" as an educational or clinical group, as contrasted with children who have severe language disorder, not specifically labelled. It is of interest to make some internal comparisons within the "aphasic" group. Only 4 receptive aphasics were reported as such, as compared with 52 expressive aphasics. This makes excellent sense, since the prevalence of pure receptive aphasics is generally reported as being extremely small (Griffiths (1972)). The Moor House residential school for aphasics and severe language disorder (Britain) contains only one wide-age-range class of pure receptive aphasics. As Rutter and Martin (1972) point out, receptive difficulties of language are found much less frequently than expressive difficulties, and comprehension/ receptive disabilities are overcome much more rapidly than expressive in the development of young pre-school and school children. The same point is illustrated and confirmed by the evidence from scores on specific language tests discussed later which shows expressive difficulties to be the most frequent of all language difficulties, and receptive difficulties to be less frequent, and to lessen with age.

14.2.4 Age Distribution

The majority of the Total Group (i.e. all language handicap groups in the study) were at the 6-9 year level (40%) and the 10-13 year level (32.6%), i.e. a total of 72.6% in the primary and junior stages.

The much smaller proportion of children in the under-6 group reflects the smaller number of children found in pre-school facilities or diagnosed earlier than 6 years of age. The reader is referred to the later discussion of age of diagnosis for first placement. This first assessment is centred around 6 years of age, with relatively little placement before this age.

The small proportion of adolescents, 10-14 years, (16.4%) suggests a variety of conclusions:

1. There is a lack of provision at the secondary level for children with language disorder, including autistics.

2. It is possible that children have improved sufficiently by age 10, or later, not to be found in special settings such as schools or classes. This would tend to be confirmed by the small amount of evidence available on the success rate of children with severe language disorders in improving or returning to regular schools, e.g. Griffiths (1972) who found that one-third of aphasic children in her survey returned to regular school by age 9.

3. There are simple administrative facts; e.g. that facilities such as Bedford Park Public School provide for children up to age 13; thereafter, whatever the level of progress, there is limited provision for them. This study was unable, within its time constraints, to follow through such cases of children over 13 to see if organized facilities exist. Outside areas such as Toronto they probably do not. In Ottawa, an adolescent unit is about to be opened (1977) to accept children who have passed through the McHugh School for autistics. The proportions of the Language-Disordered group in the various age groups is approximately the same as for the Total Group (of which it forms a major part) but with slightly fewer younger groups (up to 9 years) and 14-20 groups, and rather more in the 10-13 years group.

   What is of interest is the comparisons within the Language-Disordered group.

   There is a significant difference in age-distribution between autistics, aphasics, and general language-disordered children. The chi square test places this far beyond the level of 1 per 1,000 chance.

   Examination of the proportions which would be expected if there were no real difference due to age (in relation to actual proportion of the diagnostic category in the sample) show that:

   A) Expected numbers of autistic children are found at the below 6 and 6-9 year level but fewer than expected at 10-13, and markedly fewer at 14-20.

   B) By contrast, significantly fewer aphasic children than expected are found at the below 6 to 6-9 level, but significantly more at the 10-13 and 14-20 level. Markedly more children who have general language disorder/delay are found at the below 6 and 6-9 year levels and many fewer than expected at later ages, especially in the 14-20 range.

   In fact, the majority of children below 6 and 6-9 years are found in the general language disorder group (24), a majority not only of the language disordered but of the Total Group. Only 3 autistics and no asphasics are found in this level.

These facts, it must be repeated, reflect the sampling of present programs. Nevertheless, it appears there is little provision for autistic children (or placements made) at the pre-school level, and similarly for aphasic children. This is strange, since the handicaps in question are so marked, and clearly identifiable in terms of language handicap and other forms of behaviour by or before age three years.

Conversely, these facts may reflect the difficulty of firm diagnosis, especially of autism, and the difficulty of differentiating between forms of language handicap as presented in autistic and aphasic children. (See discussion of aphasic and autistic characteristics in the Introduction) However, if this sample reflects the general state of affairs, it does raise questions about the effectiveness of early diagnosis, intervention, and provision.

The higher occurrence of language disordered children in the preschool and early school age groups probably reflects the sampling of these children from the specialized preschools, mainly found in Toronto, and from units which provided for language-delayed children such as Chedoke-McMaster Hospital. It is ironical, however, that children who are probably less handicapped (language disordered/delayed) may be identified and/or placed for special treatment at an earlier age than more severely handicapped children (autistic).

14.2.5 Sex Differences

Sex differences are significant and consistent throughout the whole study. The ratio of boys to girls in the Total Group is 2.25 to 1. This ratio is typical of the sex ratio in a number of handicaps and is close to the ratio of 2 to 1 quoted by Rutter and Martin (1973) for language disorder.

Within the whole Language Disorder group, the ratio for aphasics is higher than this average at 2.73 to 1 and the ratio for the language-disordered group is even higher at 2.95 to 1. The probable sex ratio for significant/severe language disorder may therefore be nearer a ratio of between 2.5 and 3 to 1. By contrast, in this sample, there were much more equal sex ratios (more girls) in groups such as hearing handicapped, educable retarded, cerebral palsied, and emotionally disturbed.

14.2.6 Ability Level (I.Q.)

Because of the relative crudity of the I.Q. data, ability levels based on recorded objective intelligence scores, or developmental levels, were classified into 5 major groups: below 50 I.Q., 50 - 79 I.Q. (retarded/slow learner), 80 - 99 I.Q. (below average to average), 100 - 114 I.Q. (bright-average) and 114 plus (bright).

As noted, 49% of the data were recorded by the school or could be retrieved by the research team from alternative sources which were reasonably accessible. This in itself raises questions about the sufficiency of data which are readily available to the school or unit. A dependable estimate of ability level for each child is essential for effective planning of placement and program. Rutter (1972), for example, demonstrates that I.Q. level in the autistic group coupled with language level, forms one of the most important predictors of educational success and general adjustment.

These scores could not be identified as being from a particular test. It is likely that they are drawn from the Peabody Picture Vocabulary Test, Stanford-Binet scale or Wechsler Intelligence Scale for Children. These, though by no means applied to all children, were those most frequently recorded. (The reader is referred to the discussion below of the specific tests used in the programs studied.)

It could not be determined whether these were verbal or non-verbal scores or an average of both. It seems likely, from the evidence referred to above, and direct observation, that the scores represent a mixture of verbal/non-verbal abilities. This accounts for the generally low mean score in the Total Group, even when obviously low-ability groups such as the trainable retarded and educationally mentally retarded are eliminated. What the group shares as a whole is low language ability.

Tests show that the most representative frequency is in the 50 - 79 I.Q. range, with 42.64 per cent of cases. That is, the majority are of retarded to slow learner level in mental ability, as tested and as recorded here. Substantial numbers (24.3 per cent) are found at the below 50 I.Q. level and at the 80 - 99 level (21.11 per cent). That is, 89 per cent of the Total Group are below or at the average level. The majority are in the slow-learning/educable retarded group, and a high proportion are in the "trainable retarded" range of ability.

Only 12.75 per cent are found in the average to above average ability range. The median I.Q. is estimated at 68.

A substantial proportion of the children with quotients below 50 are represented by the trainable or severely mentally retarded children or adolescents from two developmental centres and two regional centres which were sampled in order to examine language programs for the mentally retarded, and provide information on the contrast or similarity between mentally retarded with severe language deficiencies and non-retarded children with specific language deficiencies. (See Daley (1976)) Nevertheless, these retarded individuals (28 labelled as such: Downs Syndrome or T.M.R.) do not form all the group of 58 with low scores. Low-scoring individuals were found (as expected) in the Cerebral Palsy group (7 or 38.8 per cent of this group) and among the educable retarded (18.2 per cent of this group). As noted below, a significant proportion of the autistic group (12.2 per cent) had scores below 50.

Examination of different groups (Table 4C) shows that none of the T.M.R. group has quotients above 79. The highest proportion of the educable retarded/slow learner group (20 to 46 per cent) is found, as expected, in the 50 - 79 I.Q. group, and a small proportion (20 per cent) within the average range of I.Q., 80 - 99. The cerebral palsied/physically handicapped groups have general low scores, the majority being at below 50 and 50 - 79 level, but with some at average and above-average levels. The distribution is much as expected from what is usually reported of the intelligence levels in this handicap group (Mordock 1974).

By contrast, the hearing handicapped and deaf groups show a range of scores equally distributed between the categories 50 - 79, 80 - 99 and 100 - 114 I.Q.

These data are consistent, therefore, in identifying correctly the groups labelled with various handicaps. This gives more confidence in interpretations of the significance of the I.Q. scores, despite the fact that it was available for only half the original group studied.

What is of crucial interest is the distribution of scores in the Language Disorder group.

It is evident that -- as in the Total Group, and even with the ostensibly mentally and educationally retarded groups removed -- the scores in the Language Disorder group fall mainly within the below 50 and 50 - 79 level. If the actual percentages recorded are adjusted to take account of the 51 per cent omitted, then 66.6 per cent of the Language Disordered group have intelligence quotients at or below 79, and 86.5 per cent have quotients at or below 99. If the groups 80 - 99 and 100 - 114 I.Q. are regarded as approximately covering the average range of ability, 30.6 per cent fall within this range, as compared with the 68 per cent or more which would be expected in the normal distribution of intelligence.

It is clear, therefore, that the specific Language Disorder group is biased to the lower end of the ability range; in particular around the educable retarded/slow learner level (50 - 79 I.Q.). The majority are not in the average ability range required by restrictive definitions of specific language ability. (See the Introduction and also discussion in the Advisement to the Ministry of Education, Ontario) As noted above, it is suggested that this bias in test scores reflects what is characteristic of the group -- low language functioning -- and not entirely low general intellectual capacity.

Within the Language Disordered group, the autistic group, as expected from prior evidence, have a greater proportion of scores in the retarded range (12.2 per cent, or 33 per cent of actual recorded cases) and 18.4 (50 per cent of actual cases recorded) in the 50 - 79 level. That is, 83 per cent are found at or below the 79 I.Q. level. Their median ability level is estimated at I.Q. 59. The general language disorder/delay group also has a high proportion in the below 50 range (11.9 per cent, or 24.3 per cent of actual cases) and 50 - 79 range (20.9 per cent, or 44 per cent of actual cases), i.e. 68.3 per cent at or below 79 I.Q. level.

However, as noted, about 35 per cent of actual cases are in the average range. The estimated median I.Q. is 70.4.

By contrast, the aphasic group has few (3 per cent) in the lowest ability level though the majority are still in the 50 - 79 I.Q. range (47 per cent). There are, however, more aphasic children in the low-average and average range, making this group, on the whole, a brighter group than the general language disordered/delayed group, with an estimated median I.Q. of 79.

These findings reinforce the conclusion that the Language Disordered group is not a simple group, readily defined in terms of language discrepancy in a group of average ability. It shares characteristics with other handicap groups.

14.2.7 Socio-economic Status

Those responsible for direct contact with the child and his family, or in a position to record the information, were asked to describe the father's occupation.

This was then coded into the Blishen scale of occupational/educational status developed in Canada in the 1960's (see Blishen (1964)). The Blishen Scale has a range of scores from 20 to 60. In this instance, it was coded as 2 to 7 and children were placed in the nearest appropriate category rather than being given a precise "score".

Category 20 is approximately unskilled labour and Category 70 contains managerial, high level executive, professional and academic occupations. The categories run approximately as follows (see Blishen (1964)):

(70 plus - Professorial, professional, executive
(70 borderline - School teacher

60 plus - Small owner/managers; health professions (not doctors)

50 plus - Nurses in training, cashiers

(40 plus to 50 - Skilled workers
(40 - Typists, printing work operators

(30-40 - Semi-skilled to skilled
(30 borderline - Paper hanger

(20-30 - Labourers, truck drivers
(20 - Unskilled

The categories, though derived from consideration of salary/wage level and educational level, correspond broadly to the "social class"categories employed by the Registrar-General (Britain) for census and other statistical purposes.

The Registrar-General classes run as follows:

Class 1 - Professional, Managerial, Executive; Class 2 - Professional e.g. teacher, psychologist; Class 3 - (non-manual) Minor civil servant, clerical/secretary; Class 3 - (manual) Skilled and self-employed labour; Class 4 - Semi-skilled; Class 5 - Unskilled and unemployed.

The reader can interpret this socio-economic scale in relation to an educational setting, in the parental opinion survey, which was basic to both the Plowden and the Gittins reports on elementary education in England and Wales respectively. (Central Advisory Councils for Education, H.M.S.O. 1967)

These latter reports and the work of Douglas (1964) on home and school produce ample evidence of the important effect of social class, or socio-economic status, on ability levels, achievement in school, in university, and upward social mobility. There are also important correlations between socio-economic status of family and likelihood of the child being handicapped in particular ways, i.e. there is a significant correlation between educational handicap in the slow-learning and educationally disadvantaged group and lower socio-economic level. There is a social class gradient, in likelihood of prenatal difficulties and peri-natal birth injury, and consequences in terms of physical and mental handicap with children from lower socio-economic groups being more at risk. (Drillien (1954))

The Blishen scale appears reliable and discriminates in terms of educational and occupational level, though it has some rather strange rankings. It relates well to perceived social status. (Blishen (1964))

The major difficulty in using such a measure is to get accurate and reliable primary data on parental occupation. This does not appear routinely on school records, though not only research but practical administrative considerations should make this fact a basic one to be collected for any complete and effective social and educational record. Experience suggests that educational agencies do not obtain this information very effectively. Teachers are often unaware, except in general ways, of the occupation of the fathers of their students. When the information is available, it tends to be recorded in rather general and imprecise forms, e.g. "works in a factory". Teachers and principals may, indeed, know more about the socio-economic backgrounds of the families of their students than appears on school records, but it appears difficult to get this knowledge in precise form. About 70% of the Total Group did not have father's occupation recorded in the present study.

Caution is therefore required in interpreting the following data.

The distribution of the Blishen categories in Ontario in 1964 was:

Blishen Scale	(70 and 60-69)		(50-59 and 40-49)		(30-39)	(Below 30)
Per Cent	4	5	10	20	35	26
	9		30		61	

This distribution may well have altered in the last 13 years, but not so as to disturb major categories. The Total Group (adjusted to actual cases, not omissions) distribution of these categories is in fact reasonably close to the Ontario 1964 distribution. (Zeros are omitted from the scales in the following tables.)

Blishen Scale -	(7 and 6)	(5 and 4)	(3 and 2)
Per Cent -	12.4	31.5	56.2

There are fewer than expected in category 2 and 3 (lowest socio-economic level) and relatively more than expected in category 6 and 7 (highest socio-economic level).

The association between Blishen categories and diagnostic categories in the Total Group is not significant (chi square test) if the omitted and unrecorded data are eliminated.

There are too few cases in the Language Disordered group to allow for any interpretation, except for the suggestion that there are fewer category 2 and 3, more in category 6 and 7, and certainly more in category 4 and 5 in the Language Disordered group than in the Total Group, or the Ontario (1964) distribution. There is no significant difference between Blishen groups (2 and 3) and (4,5,6,7) (chi square .7).

There is slight evidence to confirm the finding that autistic children tend to have families drawn from the upper socio-economic categories, but numbers are too small for more than impressions.

The same conclusion holds for the other handicap groups. There are suggestions that the hearing handicapped group has proportionately more individuals in categories 4 and 5, and 6 and 7, as contrasted with the TMR and the cerebral-palsied groups, which have a tendency to excess of category 2 and 3. It may be recalled that intelligence levels follow the same trends for these groups. Prior evidence would suggest that there is a higher proportion of children from lower socio-economic levels in the trainable-retarded groups. (Robinson and Robinson (1974))

14.3 The Inter-relationships of the Main Variables

It is of interest to discover whether the major factors are significantly related to one another. If factors are related, they may act together or form more general clusters of factors. For example, it might be expected that socio-economic status and intelligence level are significantly related, higher socio-economic status tending to be associated with higher ability and conversely. If the factors are independent of one another (though related to diagnostic category) this is an even more important finding.

Relationships between variables were calculated, making use of actual recorded data and eliminating omitted/unrecorded totals which swamp tables such as "socio-economic status" where a high proportion of general information is unrecorded or not applicable.

The answer is a clear one. In general, the major factors are independent of one another within the Total Group. the details are as follows:

Age:	relationship to Sex	Not significant	
	relationship to I.Q.	Not significant	
	relationship to Blishen Scale	Not significant	(chi square 3.68 for 3 d.f.)
Sex:	relationship to I.Q.	Not significant	(chi square 2.47)
	relationship to Blishen Scale	Not significant	
	relationship to diagnostic category	Not significant	(chi square 10.06 P .3 to .5)
I.Q.:	relationship to Blishen Scale	Not significant	
Blishen:	relationship to diagnosis	Not significant	(chi square 1.80)

The interesting relationships are:

I.Q. and diagnostic category - Chi square significant beyond the .001 probability level

Age and diagnostic category, which is highly significant - Chi square beyond .01 probability level

Since Age and I.Q. are effectively independent of one another, their effects on diagnostic category are also likely to be independent.

The same independent relationships hold within the groups forming the Language Disordered category.

Nevertheless, there are some interesting trends, despite the lack of statistical association. There is a tendency for there to be an excess of boys over girls (2.64 : 1) in the under-6 year group and fewer than expected in the 10-14 year group (2.16 : 1).

The younger the child, the higher the probability that his I.Q. was not recorded:

Age:	Under 6	6 - 9	10 - 13	14 - 20
Per Cent omitted:	70.6	55.4	37.7	41.3

On the assumption of equal frequency throughout each age category, the median I.Q.'s are estimated as:

Age:	Under 6	6 - 9	10 - 13	14 - 20
I.Q.	65	68.6	68.6	61

For I.Q. under 50 and 80-99, the modal or most representative age was 10-13. For I.Q. 50-79 and 100-114, the modal age was 6-9. In other words, there is a bimodal distribution of intelligence (a low and a high peak) at these two age levels which may reflect accumulations of particular diagnostic categories at those age levels.

Age and Socio-economic Status

Although there is no significant statistical relationship, there is a trend suggesting that, the older the child, the lower the socio-economic status. As with the I.Q. measure, the younger the child, the more probable that the record of parental occupation has been omitted:

Age:	Under 6	6 - 9	10 - 13	14 - 20
Per cent omitted: (socio-economic status)	74.5	74	69.2	58.8

Sex and Diagnosis

Although there is no significant over-all relationship, there are interesting fluctuations in the male-female ratio in different categories of handicap.

I.Q. and Socio-economic Status

Although the over-all relationship is not significant, there is a trend for I.Q. to be negatively related to socio-economic status, i.e. the higher the status, the lower the I.Q. This is illustrated by the estimates of median I.Q. for each group of socio-economic categories:

Socio-economic status -	2 and 3	4 and 5	6 and 7
Median I.Q. -	64	61.5	50

This finding is unexpected. Within the sample of handicaps found in this study, a possible explanation is that groups, such as hearing-handicapped who have relatively higher ability levels, were drawn from lower socio-economic levels whereas the autistic group, which tends to have an excess of families at the higher socio-economic level, were also those with lower ability levels.

Omitted Records; Systematic Effects

There is a fluctuation in the proportion of unrecorded occupations, the lowest proportion for unrecorded data (44.8 per cent) being at the below-50 I.Q. level and the highest unrecorded data (83.4 per cent) in the very small I.Q. 114 plus level.

There are sufficient of these effects viz. the trends for boys and younger children to be less well recorded, and those discussed above, for them to be monitored in any assessment and record system for the handicapped, and to be analyzed in any further research involving handicap and factors such as I.Q. level, age, and socio-economic level. These trends are too small and inconsistent to upset major trends in the data, but they are nevertheless perturbing effects, systematically biasing the information.

14.4 ADMINISTRATIVE, EDUCATIONAL AND DIAGNOSTIC FACTORS

14.4.1 The Questions Bearing on the Characteristics of the Child

Among questions of interest are:

At what age was the child diagnosed and placed in special education?

How many placements has he been in?

How many kinds of record are there on him?

What is the birth history?

Is there evidence of possible neurological handicap?

Level of hearing loss; evidence of hearing and vision being checked?

What discrepancy is there between verbal and non-verbal abilities and between language age and chronological age?

What kinds of specific language difficulties are observed in test data?

What reading levels are reached?

What records are available on the child?

What kinds of tests and assessments are used to determine handicap?

The age of diagnosis and first placement may be related to the severity and kind of handicap; it also reflects the practices of the system in identifying and assessing handicapped children. Sufficient is known about language handicap to show that intervention should take place as early as possible. (Kleffner (1973))

The number of placements into which the child has been put may reflect problems of diagnosis, or of finding appropriate programs; if there are such diagnostic difficulties, as in autism, the child may be placed in several facilities in order to identify his handicap and seek to meet his needs.

This factor also reflects the practices of the educational system and the provision available.

The number of records or assessments on a child may reflect the complexity of his problem, or the comprehensiveness of evaluation, and should be related to factors such as age of identification and number of placements.

Basic to the description and preparation of programs for the child is the question of the recorded data available. It is of interest to know what kind and variety of assessment/evaluation instruments are available to describe the complexity of language disorder.

Prenatal and perinatal difficulties are known to be associated with handicapping conditions. Maternal rubella, as is well known, is associated with severe handicaps of hearing, vision and behavior in the child affected; perinatal difficulties causing trauma or damage to the young child, including lack of oxygen at critical periods during and after birth, are well known to be associated with physical handicap and mental retardation. There are well-known social-class gradients in perinatal difficulties which can reflect a number of factors such as the mother's physical build, her health and nutrition, standard of medical/social care, obstetric care and other factors. It is of interest to find whether there are obvious factors related to language disorder.

Since language disorder is related to difficulties in processing and integrating information, it has been proposed (Eisenson (1972; Mordock (1975)) that aphasia may have a neurological foundation. Language loss may in some instances be caused by brain dysfunction following infection and fever or prolonged convulsion in early childhood at a time when speech is being acquired. So, it is of interest to find whether there is any evidence in this study of neurological disorder.

A small number of children labelled "brain damaged" (15) was found in the study. It is also known that in adolescence a significant proportion of autistic children may have epileptic seizures. (Rutter (1972))

Basic to the whole definition of language deficiency/delay is the question of the discrepancy between verbal and non-verbal ability. Among criteria proposed for language-disorder/delay are the following: (See the Introduction and also the Advisement for more detailed discussion.)

1) A child's having a language level of less than 4½ years in terms of mastery of grammatical structures.

2) A rough criterion, up to age 7, of a 2 to 3 year gap, or more, between language level and general intellectual functioning as indicative of significant language delay.

3) A discrepancy of a specified number of scaled score (I.Q.) points between verbal and non-verbal test scores, often set at about 30 I.Q. points. It was possible to test these proposals, in part, against the data.

The majority of handicapped group display educational retardation, e.g. the marked educational retardation, especially in reading, found in the cerebral-palsied and the hearing-handicapped groups. Language disorder obviously affects all language learning directly, and hence the development and use of language in school. Griffiths (1972), among others, indicates that children with severe language difficulties continue to have educational difficulties even when they have made considerable improvement in language by age 9. Follow-up of aphasic adolescents (Moor House, U.K.) shows that they are low in educational attainment, do not make good progress and are likely to hold occupations well below their level of general ability. An attempt was made to check the level of reading attainment in the language-disordered group.

As noted above, the actual characteristics and needs of the child are mirrored by the practices of the educational system and interact with them. The data recorded and used by the system are what it must presumably rely on to make effective decisions, and to assist in devising appropriate programs for the handicapped child.

The data are, however, not uniform in quality. There is no minimum level of information on each child except for the Ontario Student Record. (See para. 4.2 below)

Lack of data, or patchiness of data, must obviously affect the validity of inferences drawn from the information. The following are examples of questions to which answers were unrecorded or unavailable:

> Age of first diagnosis - 92.4 per cent unrecorded by school/agency.
>
> Reading grade - 86.7 per cent unrecorded in child's record.
>
> Discrepancy between verbal and non-verbal assessment - 87.5 per cent unrecorded.
>
> By contrast, age of assessment for present placement - 68 per cent unrecorded.

Probably the majority of individuals in this study have normal eyesight, in terms of acuity and function. Nevertheless, it is known from research studies that a significant proportion of trainable retarded, especially Downs Syndrome, and the physically handicapped have visual handicaps as well. It is disturbing to find, therefore, that the school did not have a record of whether eyesight had been checked in 87 per cent of cases.

Hearing is also a crucial factor in learning. It is known that a proportion of children may have mild or intermittent hearing loss from time to time. Significant hearing loss is in itself a handicapping condition, and is related to language handicap. The checking of hearing should be routine, especially where language handicap is concerned. Yet in 59.3 per cent of present cases, it was not recorded by the school or facility whether hearing had been checked. There was an even lower frequency of recording of hearing loss. Certainly, the majority of children, as the data in this study suggest, are unlikely to have hearing loss and would be a null entry, but this entry is not systematically recorded to check on this point.

As far as medical/psychiatric information is involved, the records of the school are unlikely to contain this. In 88.9 per cent of cases, it was not recorded whether the child had had an EEG (electroencephalogram) which is used as a diagnostic check for gross brain dysfunction. Similarly, information on whether a child has received a neurological examination is not recorded in the majority of cases.

As noted above, data on I.Q. or equivalent scores were not recorded in just over half the cases (51 per cent); scores on specific language tests, which would not only be appropriate but crucial in the diagnosis and the planning of program for children with language disorder/delay, are not available in 52.2 per cent of cases.

With the above constraints and cautions in mind, these are the findings.

14.4.2 Types of Record Available on the Child

(1) In the Total sample, 81.5 per cent had an Ontario Student Record. Very few other sources of information were recorded by the school. There was a psychological report in 3.7 per cent of cases, information from the speech pathologist in 2.5 per cent of cases and from an audiologist in 1.6 per cent of cases. Also, there were minute proportions of children who had records from other sources, such as paediatrician or psychiatrist. Total professional records of any kind amounted to 10.2 per cent of all records.

The records were made available to the research team and searched by them. Where other data were known to be available and could be released, e.g. medical or psychiatric case-history in an institution or hospital, this was reviewed systematically for relevant information. The distribution of information does not, therefore, reflect the lack of systematic review by the research team. School information from medical sources was at times held in a different file (as in the City of Toronto) and it was necessary to seek for release of appropriate information under conditions of confidence.

Information from psychologist, speech pathologist, audiologist or other professionals may have been held elsewhere than the school. Where records were banked separately or centrally, the team made every effort to follow through and review each record individually.

An obvious point is that, if information is available but held elsewhere than in the school record, it is in practice inaccessible to the school or facility in its daily work of assessment of the child, correct placement, and planning of program for remediation.

(2) There appeared to be no differences in distribution for the Language Disordered Group, nor were there significant differences in the kinds of information available for autistic, aphasic, and generally language-disordered groups.

14.4.3 Number of Records Available for Each Child

With a complex and variable handicap such as language disorder, it would be expected that a child would need a variety of kinds of record, e.g. educational, psychological, linguistic.

(1) In the Total Sample, the modal or most frequent number of records for a child is 3 (29.8 per cent) followed by 2 (18.3 per cent) and 4 (17.9 per cent). A cumulative total shows that 70.3 per cent of children have from 1 to 4 records and the median is nearly 3 records. However, a significant though small number have up to 7 records, and individuals have up to 11 records.

This suggests that children have had several different assessments, or have gone through a number of different placements for special education, depending on the complexity and severity of the handicap, age, and other factors.

It might have been predicted that older children should have more records, simply because of longer exposure to assessment, re-assessment, and successive placements. In fact, the reverse seems to be true; there is a tendency for the younger age group to have proportionately more records beyond the number of 4:

Age:	Below 6	6 - 9	10 - 13	14 - 20
No. of records:	10.1	8.1	6.3	1.3 (Per cent of own column total)

(2) The Language Disordered group were tabulated separately. The autistic group tend to have more records, a median between 3 and 4, rather than just below 3 records, as for both the Total Group and the Language Disordered group. Both aphasics and autistics appear to have fewer cases with only 1 record. By contrast, the language-disordered/delayed group are a higher proportion with only one record.

(3) Examination of other handicap groups shows that the median number of records for the trainable retarded is between 2 and 3 or just below 3. The spread of number of records is less, i.e. the majority have up to 4 records. The educable retarded have a similar distribution.

For the cerebral palsied, though the median number of records is just below 3, there is a spread up to 7 in the number of records.

The hearing-handicapped/deaf groups have a distribution similar to that of the language-disordered/delayed group.

The trends in the data, therefore, suggest that groups such as the autistic have more records, hence possibly more diagnoses and/or placements. But it is evident that any handicaps where language disorder or delay is involved have numerous records and a range of records/assessments of 1 to 4 or even wider.

14.4.4 Number of Diagnoses

This information is relatively well-recorded, 73 per cent of information being on record.

In the Total Group, the modal was 1 diagnosis (38.4 per cent). See Table below.

The cumulative distribution shows that the median number of diagnoses is between 1 and 2, just below 2 diagnoses:

Number of diagnoses	1	2	3	4	
Per cent (cumulative) -	38.4	59.5	69.6	72.3	73.1
	65.30	86.50	96.50	99.20	100.0

(26.9 per cent omitted)

There is a tendency for older age groups to have more diagnoses, as would be expected, i.e. 3 or more diagnoses, but they also have more cases with only 1 or 2 diagnoses. This suggests that there are two older groups involved, those with fairly simple diagnoses, and those with more complex or difficult problems. With increasing age and opportunity for re-assessment, allocation to each of these contrasted categories becomes clearer.

The language-disordered/delayed group has a distribution very close to that of the Total Group, with similar frequencies of children with only one or two diagnoses (mainly only one). There are, however, fewer with three and four diagnoses. It will be recalled that this group had a higher proportion of children below age 6 and so, likely to have fewer diagnoses.

The aphasic group have a higher proportion with only two diagnoses.

The autistic group have a higher proportion with two diagnoses (similar in this regard to the aphasics) but a higher proportion with four or more diagnoses.

The fact that the median number of diagnoses falls, on the whole, between 1 and 2 for all language groups, therefore, by no means tells the whole story.

The greater variability of the autistic group is consistent with previous information, that this group can present problems of diagnosis. A child with autistic behavior and learning difficulties may be readily identified as having severe language and learning difficulties. On the other hand, it may be difficult to differentiate the autistic pattern of response in language from that of the young aphasic child, (See Bartak and Rutter, (1972, 1975)); Baker et al (1976), or from mentally retarded or brain-injured groups. Hence the autistics should require more assessments and possibly trial placements. It is interesting to observe the similarity of pattern between autistic and aphasic groups in these data.

Equally important, however, is the finding that many handicap groups, however labelled finally, have more than one diagnosis and that there are many similarities between the various handicap groups with language difficulties. (See the high proportion with 2 and 3 diagnoses among the child psychotic, emotionally disturbed, brain-damaged, and cerebral palsied.)

14.4.5 The Age of Initial Diagnosis

This information was so scanty in the records (92.4 per cent unrecorded) that there is no value in analyzing the figures available. The range is from 1 to 6 years, the most frequent being 2 years (2.1 per cent) and 3 and 4 years (1.8 per cent). These findings suggest, however, that the school/facility is not aware of the age at which the child was first assessed or identified as needing help, and that the first fact for the school is the age at which the child was assessed for the present (or first) educational placement. This is also consistent with the finding in the next paragraph, that the majority of children are not assessed or identified as handicapped until of school age viz. 5 or 6 years, unless they are placed in a preschool unit. This fact, if confirmed, has rather negative implications for the effectiveness of early identification or intervention which is held to be crucial in language handicap. (See Griffiths (1972); Kleffner (1973))

14.4.6 The Age of Diagnosis for Present Placement

This was recorded in 68 per cent of cases for the Total Group. The information appears reliable and consistent. The majority of children were diagnosed at 5 years (8.8 per cent) and 6 years (7.0 per cent) but with significant frequencies at 4 years (4.1 per cent) and at 7, or 8 and 9 years of age (3.9 per cent and 4.1 per cent respectively).

The cumulative proportion shows that the median age of diagnosis lies between 5 and 6 years of age.

The Language-disordered Group:
The majority of the autistic group did not have age of present diagnosis recorded (79.6 per cent), making any interpretation hazardous. Examination of the distribution show occurrences at age 4, 5 and 7, but no evidence of earlier diagnosis. It is difficult to determine whether the facts of diagnosis for the autistic were not available, or simply not recorded. If, as can occur with children with complex handicaps such as the autistic, the child has had a succession of diagnoses and/or a succession of placements, it is probable that the present placement facility may not contain reference to the initial age of placement. This, however, is not a very good reason for incompleteness of record on the part of the school or agency.

One reason for incompleteness of record in part of the autistic record is the fact that in reviewing a major facility for adolescent autistics, Kerry's Place, the administration did not give access to children's records although parents had signed comprehensive consents releasing this information, and data on children had to be assembled by discussion with each teacher or program co-ordinator.

The aphasic group appear to have proportionately more in the age group 5, 6 and 7 than the Total Group.

The language-disordered/delayed group have more in age group below 4 and slightly fewer at age 6 and 7, but there is also a wide range of age of diagnosis, up to 10 years.

The reason for the wide spread of age of diagnosis in the language-disordered group is its complexity and heterogeneity, i.e. it contains many levels and kinds of language handicap, some more severe and some appearing earlier than others. The slightly higher occurrence of younger children, i.e. diagnosed for placement before 3 years of age, may reflect the fact that language-disordered or language-delayed children were found in a number of special pre-school units in the Toronto area, and in special pre-school units for children with language delay such as the Chedoke Hospital program.

However, there is no systematic early identification of children with language handicap. Progressive practice suggests that identification and intervention can take place by age 3 years. (Griffiths and Northwestern University projects (1977))

There is no clear association between present age and age of diagnosis for present placement. However, the figures suggest that children aged below 6 years are more likely to be diagnosed by age 4 or 5 (as would be expected, since they are likely to be in preschool programs), 6 to 9 year olds are most likely to have been diagnosed for first placement by 6 to 7 years, while 10 to 13 year olds are also most likely to have been diagnosed for placement by 6 to 7 years (10.7 per cent) but with nearly equal proportions diagnosed at 4 to 5 years (8.8 per cent) and 9 plus (8.1 per cent).

14.4.7 Number of Previous Placements

This information is probably related to age of diagnosis and to number of records on the child. It should also be related to complexity or difficulty of diagnosis, in theory.

The modal or most frequent placement (36.3 per cent) in the Total Group is 1 placement, i.e. the child is in his first special placement. The cumulative proportion shows that the median placement is between 1 and 2. Up to 76.1 per cent have between 1 and 3 placements, and 80 per cent up to 4 placements. Proportions above this are small, but there is, nevertheless, a wide spread of individual placements, from 6 to 11.

The general pattern of the Language-Disordered group is similar However, the autistic group have a lower proportion with 1 diagnosis (34.7 per cent) and a distinctly lower proportion with 2 (55.1 per cent) but have more with 3 to 5 placements. The median for autistics is approximately 2.

The aphasic group have a higher proportion than the total language group with 2 placements but fewer with more than 2 placements. Median is between 1 and 2.

The language-disordered group has a higher median number of placements, i.e. between 2 and 3, and a scatter of 8, 9 and 11 placements. Once again this is evidence of the variability and heterogeneity of this group, and the difficulties of diagnosis and/or placement to meet their needs. There is a consistent pattern: the autistic group differs from the general language-disordered group and the aphasic group (as it does in age distribution, ability level and socio-economic status). But once again, it is evident that many other handicap groups with language disorder/delay also have a wide range of previous placements (up to 3).

14.4.8 When Was the Child Last Assessed (Tested or Evaluated)?

Most of the children in the Total Group had been assessed in the last year (1976/7), i.e. 38.8 per cent, or in the previous year, 1975 (18.5 per cent). That is,57.3 per cent had been assessed in the two years previous to the study. There is, however, a significant proportion assessed in 1974 (6.4 per cent) and 1973 (4.5 per cent).

It is unexpected to find that individuals are recorded as being last assessed from 1971 as far back as 1963.

Assessments back to 1971, and beyond, are found mainly in the 14-20 age group, and are based on small numbers. A number of mentally retarded, drawn from regional centres, is likely to be found in this age group. It is possible that those assessed as far back as 1971 to 1963 now have stable diagnoses, or assessments, which have consistently shown that intellectual level is low and stable. Nevertheless, despite the presumed stability and validity of the assessment, it seems a dubious practice to rely on evaluation/classification made between 5 and 14 years ago.

Other evidence (i.e. the fact that very few secondary schools are recorded, in this study, as providing programs for language-disordered children) suggests that the above 14-20 group is not likely to be found in the regular school setting, in which the majority of the mixed group of language-disordered/delayed children (excluding aphasic and autistic) are likely to be found. See Chapter 16 (Programs).

Most of the language-disordered group had been assessed most recently between 1973 and 1976. Among the Language-Disordered group the autistic group was mainly assessed between 1971 and 1976, but had a quite wide scatter of years of assessment with a peak at 1974. The aphasic group had been assessed mainly between 1973 and 1976. The language-disordered/delayed were mainly assessed in 1975/1976 and resembled the hearing-handicapped group in distribution.

The trainable mentally retarded, however, though mainly assessed in recent years, had assessments going back to 1965 or earlier in individual cases. This confirms the inference drawn above, that mentally retarded or low functioning individuals may be classified as such at an earlier age, and their level of performance or diagnosis seen as fixed. This ignores the need to confirm that they are still at this level, and to assess specific changes or progress.

14.4.9 Reason for Placement in Present Facility

It was hoped that this question would throw light on the reasons for placement, and the relationship of placement to the child's needs. However, the majority of cases in the Total Group (77.6 per cent) were reported as being placed in that program simply because it was available or suitable. Presumably, the suitability related to its meeting the needs of children with specific language disorder, or with language disorder associated with another handicap, since only 2.9 per cent of cases were reported as specifically placed in a unit which met the needs of the language-disordered/delayed.

There were no age differences, nor were there any real differences in diagnostic category, i.e. the Language-Disordered group is obviously treated the same as the other handicap groups in terms of placements.

14.4.10 Physical Handicaps and Conditions Related to Handicap

The next section discusses factors which may be related to handicap, i.e. checks on visual and hearing handicap, neurological handicap and record of birth difficulties.

1. Has Eyesight Been Checked?

This fact was not recorded in 76 per cent of instances. Some 23.2 per cent (i.e. 91 per cent of those actually recorded) had been tested for vision. The figures are too restricted for any positive conclusions about the different diagnostic categories, except that certain groups (autistic, hearing handicapped, physically handicapped) have a higher proportion of recorded checks.

2. Has Hearing Been Checked?

The school or facility had no record of hearing being checked in 59.3 per cent of cases, but this allows of reasonable inference because of the consistency of the recorded proportions.
Among the Total Group 39.4 per cent (86.5 per cent of those recorded) had had their hearing checked recently. They constituted about one-third of each age group, except for the 14 - 20 year group where the proportion with hearing checked was higher (53 per cent). This is interesting, in view of the fact that the 14 - 20 year group has been shown, in the discussion of date of last assessment, to have a wide scatter of assessments dating back beyond 1975. It seems likely that the individuals contributing to this total in the 14 - 20 year group included adolescent groups with language handicap in the schools for hearing-handicapped at Milton and Belleville, and adolescent autistics.

This inference is partly supported by the distinct variation in incidence of check on hearing in the different diagnostic groups.

The hearing-handicapped/deaf groups had an 88.9 to 100 per cent occurrence of check on hearing.

Within the Language Disordered Group, the 4 receptive aphasics had all been checked for hearing loss. This is consistent with the fact that receptive aphasics are known to have a high incidence of mild to significant hearing loss. By contrast, there were low proportions (31.6 to 36.7 per cent) in all the other language groups with checks on hearing.

The language-disordered/delayed had been checked in only 31.6 per cent (recorded) cases. The autistics had been checked 36.7 per cent of the time, and the expressive aphasics 48.1 per cent.

In view of the possible direct and indirect relationship between language delay and hearing loss (Griffiths 1972) the need to distinguish between inability to hear and the inability to listen/comprehend, and the crucial need for a clear differential diagnosis establishing language disorder as distinct from other factors, it is disconcerting that there is such a low (recorded) proportion of checking on hearing loss.

All children with any suspicion of language delay or disorder should have comprehensive, systematic, and regular checks on hearing function.

In the opinion of the writer, all children entering education should be required to have a comprehensive hearing evaluation.

It was hoped that evidence could be gathered on:

Whether hearing loss is bilateral or in one or other ear, and

Whether hearing loss goes back to time of birth or was acquired later.

For neither question was there sufficient information recorded by the school/facility. For bilateral vs. other hearing loss, 87.5 per cent of cases were unrecorded. For congenital vs. acquired hearing loss, 96.3 per cent of information was unrecorded. This is understandable, since both pieces of information are more likely to be of interest and to be recorded by the medical advisor or audiologist. Nevertheless, in view of the difference in clinical and educational significance between congenital and acquired hearing impairment, it would be useful for the school to be aware of the fact.

14.4.10 3. Extent of Hearing Loss

Whereas it is understandable that detailed information on onset and type of hearing loss might not be recorded, it was disconcerting to find that, in 87.1 per cent of cases in the Total Group, information on hearing function was not recorded, even as "normal".

In view of the limited data available, hearing loss was classified to some degree arbitrarily as "some", "mild" (20-40 decibel loss), "moderate" (40-60 decibel loss) and "severe" (over 60 decibels). The categories had to be adopted because some records did not give audiograms or records of decibel loss but only estimates of percentage loss.

Within these categories, based on recorded cases:

"Severe" hearing loss was 25 (5.1 per cent), "moderate" loss 17 (3.5 per cent) and "some" plus "mild" 21 (4.4 per cent).

The consistency of the data was confirmed by the finding that, in terms of own totals, 88.9 per cent of those classified as "hearing handicapped" or "deaf" had "severe" ratings for hearing loss, 11.9 per cent had "mild" ratings and 38.9 per cent had "moderate" ratings. In the total hearing-impaired group (hearing-handicapped and deaf groups together), 48 per cent had "severe' loss ratings, 33 per cent had "moderate" ratings, and 14 per cent had "mild".

The Downs Syndrome group, known from previous research evidence to be liable to auditory handicaps, had 2 cases (13.3 per cent) even though, there was a very high incidence of unrecorded data for the total trainable mentally retarded group.

Among the Language Disordered group, half (2) of the receptive aphasics had moderate hearing loss. This is consistent with prior evidence on the relationship between receptive aphasia and hearing loss (Griffiths (1972); Eisenson (1968)). Among the expressive aphasics, 13.5 per cent of own total had severe hearing loss and 3.8 per cent had moderate loss. In the data the aphasic groups are combined. It should be noted that a number of aphasics, labelled as such, are drawn from the program for aphasics at the Belleville School for the Deaf.

However, only a proportion of these had significant hearing loss. Other children, labelled as aphasics (e.g. in Bedford Park Public School and board of education classes), were not selected for their programs because of hearing loss. The relationship between aphasia and hearing loss seems likely to be a valid one, not just a reflection of sampling (i.e. that aphasics were disproportionately drawn from schools for the hearing-handicapped).

Among autistics, 6.1 per cent had severe hearing loss. By contrast, there was a low occurrence of recorded hearing loss, and mainly at mild levels, among the general language disordered/delayed groups.

The numbers were insufficient to permit different diagnostic groups, except the hearing handicapped/deaf, to be compared for degree of hearing loss.

It is of interest, for diagnosis and programming, that a significant number of autistic and aphasic children have severe to moderate hearing loss. This underlines the need to ensure a comprehensive review and recording of hearing function in every case of significant language handicap.

14.4.10 4. Evidence of E.E.G. or Neurological Investigations

As noted in the Introduction, aphasic and more general language disorders have been associated with neurological damage occurring before or at birth, or due to later infection, fever, or accident, or to developmental delays which implicate the neurological system. (See Mordock (1974); Eisenson (1968))

Kleffner (1973) points out that it is inability to use language input that is crucial in language disorder or delay. It is of interest, therefore, to establish whether this is indeed a significant factor. It might be assumed that children with severe language handicaps, especially those with complex diagnoses, would receive neurological examination to ascertain or eliminate this factor. Neurological examination may reveal obvious dysfunction.

The E.E.G. (electro-encephalogram) is also used to establish if there appears to be immature, irregular. or pathological patterns (frequency and amplitude) of brain-wave patterns. The technique is probably most useful in detecting gross features such as brain dysrythm, or foci of actual or potential epileptic seizure. Despite being an objective recording, the technique is still essentially dependent on diagnostic skills and inference, and may not be particularly revealing of anything but obvious cerebral dysfunction.

14.4.10 5. Has the E.E.G. Been Checked?

In 81.5 per cent of cases, in the Total Group, the school/facility had no record of an E.E.G. examination.

Based on very few cases, the most frequent records were:

autistics, 26.5 per cent of own total, cerebral palsied/physical handicap, 25 per cent, and brain damaged, 13 per cent. The educable retarded (15 per cent) had a higher number and proportion than the "brain damaged". All these categories might be expected to have higher than normal frequencies of brain damage or dysfunction, but it is strange to find such a low proportion of recorded E.E.G. examination in the group actually diagnosed as "brain damaged".

The language disordered group was slightly higher than the hearing-handicapped (85 per cent of own total). There were low occurrences in the aphasic group.

With the very tentative inferences which can be made here, it seems there is no recorded evidence for a high level of neurological investigation in the Language Disordered groups, apart from the autistic group.

14.4.10 6. Neurological Examination

In this area, 88.9 per cent of data were not recorded. Hence conclusions are extremely tentative. The highest proportions are:

autistic 22.4 per cent, brain-damaged 20 per cent, educable retarded 15 per cent. Of the brain-damaged at birth, 50 per cent had had a neurological examination. Prior evidence suggests the probability of brain damage or dysfunction in the autistic group (Rutter (1972); Ritvo (1976)) and so a need for a neurological check.

The aphasic and language-disordered/delayed groups, however, had low occurrences of neurological examination (5.8 per cent for the language-disorder group, i.e. lower, if anything, than for other handicaps).

There is no evidence, from these scattered findings, that the language-disordered are regarded as needing neurological investigation.

14.4.10 7. Birth History and Difficulties Surrounding Birth

As noted, there is possibility of damage or malfunction to the brain or delayed development connected with prenatal or perinatal difficulties. Birth stress is known to cause physical handicap (cerebral palsy) and is a possible factor in some varieties of mental retardation and in learning disabilities. Premature children are also at risk in terms of physical and mental development.

The schools/facilities recorded the birth history in 39.4 per cent of cases, this is not high, but is higher than expected in view of the fact that medical, social and developmental data (obtained long before assessment for school placement) tend not to be recorded by the school, or may be located elsewhere than in the school record.

There are consistent patterns in the recorded data.

In the Total Group, 21.2 per cent had prenatal or perinatal difficulties, or were premature. Adjusted for missing cases, this would be 53 per cent of all cases. This is a very high proportion, suggesting that birth difficulties contribute to, or are associated with, language and other forms of handicap. Perinatal difficulties were in the majority, presumably related to difficulties in labour, prolonged labour, difficult birth presentations, anoxia, stress or damage to the child during or just after birth. There is a social-class gradient, suggesting that lower socio-economic groups are more at risk (as expected from prior research). Cases are too few to establish this pattern in the present data.

The pattern of birth difficulties for the Language Disordered group shows that there were fewer birth defects in all categories (prenatal, perinatal, and premature) among the Language Disordered group (14.7 per cent) than in the Total Group.

Within this group, the autistic group appears to have the highest frequency of prenatal difficulties (8.2 per cent of own total) and of prematurity (6.1 per cent). The aphasic group appears to have the highest proportion of perinatal difficulties (9.1 per cent of own total).

To draw the contrast, the cerebral palsied and physical handicap groups, known to have a high incidence of actual trauma and damage, as a result of perinatal stress, show a high incidence of this stress (28.5 per cent of own total) relative to the other groups. A similar pattern is found in the brain-damaged group (26.6 per cent). Also of interest is that the educable retarded group had a high incidence of perinatal difficulty (20.5 per cent). The deaf and hearing handicapped show no unusual evidence of perinatal difficulties or prematurity, but have a relatively high proportion of prenatal difficulties.

In summary, there appears to be no strong evidence for birth difficulties, as such, causing developmental delay or damage as an obvious factor in language handicap, as compared with other handicaps. On the other hand, there is a recurrent and consistent trend for the autistic group to show evidence, here as elsewhere, of developmental and neurological difficulties.

14.4.11 Ability and Attainment Patterns

A crucial aspect of language disorder or delay is the gap between language ability and skills and non-verbal or general ability. The importance of this discrepancy in defining and measuring deficiency is discussed in the Introduction of the report (and in detail in the Advisement to the Ministry of Education, Ontario)

14.4.11 1. Discrepancy Between Verbal and Non-verbal Abilities

As noted above in discussion of I.Q. levels, the records do not differentiate between verbal and non-verbal abilities. The general level of functioning, described by the intelligence tests scores, reflects language ability as well as general intellectual level.

Schools/facilities do not usually record verbal/non-verbal discrepancy in intelligence scores. About 87.5 per cent in the Total Group was not recorded or known.

Of the small number of cases recorded, 25 (5.1 per cent) had a discrepancy of up to 15 I.Q. points between verbal and non-verbal scores; 21 (4.3 per cent) had a discrepancy of more points. Adjusted to percentage of actual cases, these are: 35.2 per cent (up to 15 I.Q. points) and 34.4 per cent (I.Q. 15 - 24).

2. Discrepancy Between Language Age and Chronological Age

This measure, based directly on teachers' observations, is much more reliable. Omissions were 55.2 per cent.

The majority (13.3 per cent) in the Total Group had a discrepancy of 2 years, followed by a discrepancy of 3 years (10.1 per cent) and a significant proportion with 4 years' discrepancy (6.6 per cent). That is, 29.4 per cent had a discrepancy of from 2 to 4 years. If adjusted pro-rata, to take account of the fact that they are based on only 44.8 per cent of data, the percentages would be 29.6 (2 years); 22.5 (3 years); 14.7 (4 years) -- a total of 66.8 per cent with a discrepancy of from 2 to 4 years (language/chronological age).

There is, in addition, a wide scatter of discrepancy up to 7 and 9 years between language age and chronological age.

The point was made in the Introduction (and discussed in the Advisement) that one practical criterion for defining language handicap is a gap of at least 2½ years between language age and general mental level (non-verbal) up to age 7 years. These data confirm that this is a realistic estimate, and that the educational system is, in fact, without defining the criterion explicitly, classifying as language-deficient those children with gaps of 2 years, or more, between chronological age and language age.

It should be noted that the discrepancy between language age and chronological age is not necessarily based on a gap between an average level of mental functioning and language level. From the evidence on intelligence level, this whole sample is heavily biased to the lower levels of tested ability. Chronological age, therefore, is likely to be higher than mental age. The discrepancy between language level and mental age (which is lower than the chronological age) is thus likely to be less than the discrepancy between language age and chronological age.

However, the effects of statistical regression (occurring when verbal ability is estimated from non-verbal scores) become more obvious when the ability level is significantly below average. This means that a smaller absolute discrepancy is needed between verbal and non-verbal scores to be significant. The reader is referred to discussion of the effect of regression on score discrepancy and language performance levels, in terms of age, in the Advisement to the Ministry of Education.

What can be concluded is that regardless of mental level, the handicap groups, identified here as having language handicap, do in fact have this handicap, and the discrepancy between language level and chronological age is in the region of 2 years and over.

The distribution of the Language Disordered group is similar to that of the Total Group. Figures are small and do not bear statistical analysis. However, the Language Disordered group, as a whole, have a slightly higher proportion of cases with 3 years' discrepancy, but fewer with 4, 5, and 7 years discrepancy.

Compared with the Total Group, and with the Language Disordered, of which they are a part, the *autistic* group appear to have a higher proportion of age/language discrepancies, amounting to 4 years, as well as a wide scatter of discrepancies. The *aphasic* have a higher proportion with 3 years' discrepancy, and fewer with 2 years' discrepancy, but have a higher proportion than the Total Group of children with only 1 year's discrepancy. On the other hand, the aphasic group has a wide scatter of discrepancies, of 5 years or above. Therefore, it seems a more variable group than the Total Group. The modal discrepancy is 3 years.

The *language-disordered/delayed* group have an unexpectedly high proportion with a 2 year discrepancy, markedly higher than the Total Group, higher than the remainder of the language group (autistic/aphasic). It also has lower proportions than the Total Group with 4 to 6 year discrepancy. This is a paradoxical result since it shows the language disordered as having a lower level of discrepancy, between age and language level, than do other handicaps. It should be noted, however, that the language disordered/delayed group has a wide scatter of discrepancies, as high as 10 or 12 years in individual instances. This underlines the constant theme that the language disordered group is *heterogeneous*. The modal discrepancy in the language disordered group is 2 years.

For comparison, the *Trainable Retarded* group have discrepancies of 2 to 3 years and a wide scatter of discrepancies up to 10/12 years.

The educable retarded group have discrepancies of 2 to 4 years, evenly distributed in terms of percentages. The hearing handicapped group have discrepancies from 2 to 10 years, with small peaks at 2, 5, 6 and 7 years. The cerebral palsied group have a median discrepancy of 3 years but range up to 7 and 8 years in individual cases. The remainder of the handicap group (totalled) has smaller percentages of 2 to 3 years discrepancy than the Language Group, but have a higher proportion of discrepancies at 3, 4, 5, 7 years and 11 and 12 years.

In other words, the reported discrepancies between chronological age and language age tends to be as large and as variable in the other handicap groups which also have language handicaps as they are in the core language disordered/delayed, autistic and aphasic groups.

The most important general conclusion is that many handicap groups with language deficiencies may show significant discrepancies between age and language level, which is essentially similar, in general distribution, to that of groups which are specifically identified as being language disordered/delayed, i.e. their language handicap is as extreme. This is an important finding. It does not, of course, state that the different language handicaps are of the same kind or origin.

4.4.12 Scores and Patterns of Ability on Specific Language Tests

There are criteria based on performance in specific tests. These criteria are discussed fully in the Advisement.

Certain specific language tests, e.g. Northwestern Syntax Screening Test, Carrow, and A.C.L.C. give cut-off scores or percentiles (below 10th percentile; below 60 per cent correct response) below which it is recommended that the child enter language remediation.

Where such test scores were available for children in the study, the scores for each test were divided into two groups: "acceptable" (or average) and "outside normal range" (indicating need for remediation according to the recommendations of the authors of the test). For the Peabody Picture Vocabulary Test, an arbitrary cut-off for being outside normal range was set at the equivalent of 75 I.Q. level, and similarly for the Reynell test.

As the following discussion shows, the use of such specific tests is limited to a minority of children, and any one test (except for the Peabody Picture Vocabulary Test) is used for only a limited proportion of children. However, it was possible to aggregate similar tests, e.g. of syntax or expression, of comprehension or receptive language.

In the Total Group, 52.2 per cent of test scores were not recorded. This compares favourably with the data for the I.Q. test. It should be noted that, in the table below, not all children took all tests. The distribution describes the actual proportions of particular children taking one particular test.

Six categories were applied to the Total Group:

1) Below average or poor vocabulary
2) Syntax below norm and needing remediation
3) Receptive language below norm
4) Expressive language below norm
5) Poor articulation (as defined by cut-off scores on the test described)
6) Comprehension below average.

An actual total of 45.4 per cent were below cut-off on all tests taken together. Corrected for the fact that 49 per cent of children were recorded, this leads to the estimate that some 94.9 per cent of children, in the full sample, have poor scores on language tests and require remediation.

The major group is expressive language (actual 18.1 per cent or 39.8 per cent adjusted pro rata for the whole group of children). Taken together, poor syntax and poor expressive language on tests account for 22.2 per cent actually recorded (some 45 per cent, pro rated for the whole group). Next in rank is comprehension (9.9 per cent recorded, 21.7 per cent pro rated). Vocabulary and receptive language each rank at 5.5 per cent recorded (12.2 per cent pro rated for the group).

It is interesting to find 2.3 per cent (4.9 per cent pro rated for the group) recorded as having articulation disorders.

These findings confirm the variety of language handicap, even on test scores, and the importance of difficulties in expressive lan-

The Language Disordered group tends to show less vocabulary retardation, more difficulties in receptive language, comprehension, and articulation as compared with the Total Group.

The autistic group shows a relatively high level of receptive difficulty (20 per cent of own total), of vocabulary difficulty and of comprehension (another aspect of receptive language), compared with total or the language group.

The small receptive aphasic group (4) shows, as expected, a high level of receptive difficulty and little else, which confirms the consistency of the data.

The expressive aphasic group shows a high level of expressive language difficulty (23.1 per cent) and difficulty on syntax tests (7.7 per cent) as would be expected. This again confirms the consistency of the data.

The language disorder/delay group has its highest proportions in poor expressive language and comprehension, but also in poor syntax and receptive language (13.3 per cent). A proportion of this group have articulation difficulties (5.3 per cent).

The language disordered/delayed group thus emerges, as expected, as having a variety of language difficulties. It resembles the aphasic group but with differences: it also resembles the autistic group.

Among the other handicap groups , the hearing handicapped group shows a higher proportion with vocabulary difficulty, receptive and comprehension difficulty. This is predictable in the light of prior knowledge.

The Downs Syndrome children show an excess proportion of children with receptive difficulties, whereas the undifferentiated trainable retarded group have a much higher proportion of children with difficulty in expressive language.

The educable retarded group snow difficulties in vocabulary and expressive language.

The cerebral palsied and physically handicapped groups show, as would be expected, a high proportion of difficulties in expressive language and in articulation (the most marked occurrence of articulation difficulties) but also in comprehension.

These findings emphasize once again the heterogeneity of language handicap.

14.4.13 Reading Grades

It is known that the educational achievements of several handicap groups, notably the cerebral palsied, hearing handicapped (Mordock (1974)) and language handicapped (Griffiths (1972)) are far below normal.

In 86.7 per cent of cases in the Total Group, no objective recording of reading was entered. This information may be available to the child's teacher in the classroom, or held elsewhere, but an on-going and up-to-date record of reading does not always appear to be part of the case record of the school. On the limited data available, the majority of children have a reading grade ranging from Grade 1 level (5.7 per cent) to Grade 3 (2.7 per cent).

The Language Disordered/delayed group (Table 27B) follows the same distribution. None had a reading grade level above 4 at highest. It seems that there is considerable educational retardation in this group, as in other handicap groups.

14.4.14 Data on Tests Used with Language-disordered Groups

The Introduction and the Advisement discuss in some detail the kinds of assessment and evaluation appropriate for children with language disorder, and refer to special tests and techniques developed for screening, diagnosis, and planning remediation.

It is of interest to compare what is available with what is used. It would be expected that a high proportion of special language assessments would be used. Although a great variety of tests is mentioned in this sample as being used, very few are used with a large number of children.

In the Total Group the test which was used in the majority of cases was the Peabody Picture Vocabulary Test (25.3 per cent). This was followed by two individual intelligence tests -- the Stanford-Binet (10.7 per cent) and Wechsler Intelligence Scale for Children (Revised) (8.6 per cent). Percentage of other tests used was much lower: Bender-Gestalt (3.5 per cent); Reynell (3.1 per cent); Illinois Test of Psycholinguistic Abilities (2.1 per cent). However, a number of specialized tests were used, amounting to 13.5 per cent, and of specialized checklists (12.1 per cent).

The tests used to any extent are few, and special language tests are not used systematically or extensively. The major tests are a vocabulary scale, the Peabody, and two intelligence tests.

The Peabody test, though practical and economical in use, especially with young handicapped children and those with expressive language difficulties, is a limited sample of language functioning. Even as a vocabulary test, it is restricted to the relationship between a pictorial concept (with heavy cultural bias) and a word presented orally. It does not assess ability to recall words, or name, or re-organize vocabulary in terms of meaning (semantics) as in the Binet or Wechsler vocabulary. For this reason, it may be of less value in predicting language response (or other forms of learning disability related to language) than a more complex test of vocabulary.

The Stanford-Binet, being a test in which the various items are mingled and tap motor skills, visual and auditory perception, oral and sequencing skills, especially up to 7 year level, produces a global score with a heavily verbal component but it is difficult to get any specific diagnostic measures for language from it. Syntax and articulation are not measured specifically except by observation and inference. Whereas the test emphasizes visual and manipulative skills at early levels (2 to 5 years) it becomes heavily verbal at the 7 year level and thereafter.

The Wechsler test has more advantages in having separate verbal and non-verbal (performance) scales which sample a variety of tasks and enable scores to be obtained for separate subtests and for verbal vs. non-verbal abilities. Nevertheless, it too has a heavy verbal component, even in the non-verbal scales, in its instructions. It does not provide any adequate sampling of language skills, apart from productive vocabulary, comprehension, and verbal reasoning. All these provide complex measures which describe ability level, but are not useful for specific description of language functioning. Also, they are unrelated to planning programs. Because of its construction, its norms go down only to the 4 year level. It does not discriminate very effectively below this level, i.e. at the very point (4½ years in language development and below) where fine discrimination is needed.

The Illinois Test of Psycholinguistic Ability, despite its title, does not provide comprehensive and systematic descriptions of language functioning. The descriptive and linguistic framework of the test is unrelated to descriptions of child language and to theories of grammar and semantics developed in the last 15 years. Subtests are sometimes of questionable reliability. Subtest scores are not so independent of one another as the authors of the test claim, nor are the descriptions of the various tests in terms of channel of "input-output" or "level of response" or "content" necessarily closely related to what the tests actually appear to do -- which is to provide, on the whole, a global estimate of ability and of language functioning, but without systematic sampling of kinds of language skill or of their content or structures.

The weaknesses of this test need to be analyzed clearly, in view of the fact that it is one of the minority tests used in this sample of language-handicapped children, and that observational evidence from this study suggests that speech pathologists believe that it provides useful information on the child's language ability. Except for teaching programs, which are directly based on the I.T.P.A. categories, this test has no virtues in planning programs.

The Bender-Gestalt test is a rather strange one to find used with a language-disordered group. There are claims that this test, scored by the Koppitz method, can diagnose children with brain dysfunction and learning disabilities at younger ages. As is now increasingly clear from research on learning disabilities (Hallahan and Cruickshank (1974)), such tests of visual memory and drawing have increasingly less relevance. There is certainly no evidence of direct relevance to language functioning.

The Reynell test provides useful expressive and receptive language scales for assessing children from age 2 years to 6 years. Though its sampling of language items, in terms of what is known of developmental language stages and language structures, has been criticized (Crystal (1976)), it appears to provide a useful measure -- more, obviously, in the receptive than the expressive scale -- of a variety of language functions.

The Carrow test is a well-organized test of auditory comprehension of language for children 3 to 8 years. It is based on response to pictures testing grammatical rules and syntactic structures. It has cut-off scores for language remediation and should provide enough specific information for outline planning of remediation.

It is of interest, that when check lists are mentioned, they tend to be older general ones, such as the Vineland, and not modern checklists such as the Denver Portage, Bzoch-League or Washington Scale. The last two are specifically adapted to language assessment rather than general development.

There was a striking omission, in these records, of reference to the use of analyzed language samples and scoring such samples by methods such as the Developmental Sentence Analysis Test (Lee (1974)) or Crystal's (1976) technique.

Among the Language Disordered group the autistic had a high proportion of Peabody test scores (16.3 per cent) and also of the Wechsler test (6.1 per cent) and Stanford-Binet (4.1 per cent).

Neither of the last two tests alone (especially the Stanford-Binet) is particularly appropriate to assessment of autistic groups with severe or complex language handicap. There was more use of specialized tests (24.5 per cent) and of specialized check lists (14.3 per cent).

The aphasic group had a very high usage of the Peabody test (30.8 per cent) and distinctly more of the Wechsler test (15.4 per cent) than found in either the Total Group or the Language Disordered group. The verbal/non-verbal contrast of the Wechsler scales should be of value in testing the aphasic and the autistic groups.

There is limited use of specific language tests in the aphasic groups.

The language disordered/delayed group had a high incidence of use of Peabody tests (29.2 per cent). Proportions of usage of Stanford-Binet and Wechsler tests were similar to the Total Group -- 9.7 and 8.0 per cent respectively. There is limited use of special language tests and of specialized test checklists.

For comparison, the major tests reported for the mentally retarded group were the Peabody and the Stanford-Binet. The Stanford-Binet is presumably used because it goes down to 2 year level of functioning. Possibly, too, in the light of present approaches to task analysis, and descriptions of specific skills and responses in the severely retarded, (rather than global testing for classification and "prediction"), there is less use of formal tests.

The cerebral palsied showed much the same pattern as the retarded.

For the hearing handicapped group, the major tests were Peabody and Wechsler but this may reflect specific testing practices in the schools from which these children were drawn.

14.4.15 The Number of Tests Used

The number of child placements, the number of diagnoses, the number of records on children, all suggest that children are likely to have had more than one kind of assessment.

In the Total Group the majority had 2 tests (21.4 per cent) but closely followed by 3 tests (20.5 per cent). The cumulative distribution shows that the median is nearly 3 tests, and that 70.4 per cent have had up to 4 tests. On the other hand, a few individual children have had up to 10 tests.

Among the Language Disordered group, the autistic group had fairly equal distributions at 1, 2, and 3 tests -- (22.4; 26.5; and 20.4 per cent respectively). This indicates a higher proportion with only 1 and 2 tests than in the Total Group.

The aphasic group, by contrast, have fewer with 1 and 2 tests and more with 4 and 5 tests (21.2 and 31.5 per cent respectively).

The language disordered had a distribution similar to the aphasic i.e. fewer with only 1 and 2 tests, more with 3, 4 and 5 tests. The language disordered group, as is true for many of its characteristics, has a wider scatter of extreme scores.

It is of interest to compare the mentally retarded group which resembles the autistic group, but fewer have had only one test and more have had 3 and 4 tests.

The hearing handicapped resemble the language disordered, having fewer with 1 to 4 tests but a wider scatter with 5 and 6 and over. The "least tested" handicap group were the cerebral palsied and educable retarded, with high proportions of children with only 1 and 2 tests.

It is unexpected to find the autistic group, one of the most complex and difficult to diagnose, as having apparently fewer tests. This may reflect the difficulties of applying formal tests to this group.

The aphasic and language disordered groups display their complexity also, if relative number of tests per child is a measure. However, this analysis once more confirms the similarities of many of the handicap groups which share language handicap, and underlines the variety and complexity of all language disorders.

14.5 THE RELATIONSHIP OF MAJOR FACTORS TO THE DIAGNOSTIC QUESTIONS

This is a review of the ways in which the major factors affect response to the questions just discussed.

14.5.1 Age of Diagnosis for Present Placement (65.9 per cent unrecorded.)

1) Age: There is a strong relationship (significant at less than .01 level, chi square) between age of child and age of diagnosis for present placement, i.e. a child now aged 6 to 9 years is more likely to have been assessed for placement at 4 to 5 years or earlier. The figures in some categories are small, underlining the fact that children are not assessed earlier.

The 10 to 13 year group have had assessments at 4-5, 6-7, and 8-9 years of age, but the largest proportion is at 6 to 7 years.

2) I.Q.: is slightly related to age of diagnosis for present placement. (Table 30C) The lower the I.Q. the later the placement, according to the sampling in this study.

3) Socio-economic status It should be noted that 65.7 per cent of "age of initial diagnosis", and 67.1 per cent of "socio-economic level" are not recorded. This leaves a very small number for analysis. There is no significant pattern in this data.

4) Sex There is no significant difference between sexes.

14.5.2 Number of Previous Placements

1) Age: is significantly related to the number of previous placements, i.e. a higher proportion of children under 6 and between 14 and 20 years of age have had only one placement. This may reflect the sampling of different groups of children. The young children are still in pre-school or early school settings and have less opportunity, in terms of time, to move to alternative placements. The older group consists of a relatively high proportion of mentally retarded who have stable diagnoses and have remained in placement for some time, e.g. in a regional centre. It will be recalled that it was the older and the more retarded groups which were likely to have been last assessed several years ago (1971 or earlier).

2) I.Q.: On the whole there is no significant association with I.Q. but the under 50 I.Q. and 50-79 I.Q. groups tend to scatter more widely over number of placements (1 to 6). The small number with I.Q. over 100-114 had a smaller scatter (up to only 3 placements). It will be noted, also, in following questions, that the bright average (100-114) and the bright (114 plus) groups tend to have a less

3) Socio-economic status In general, the higher the number of placements, the greater the proportion of children with higher socio-economic status. (Groups 4 and 5, 6 and 7: Blishen). This raises the question of why this should be, if the findings are not just chance. Various hypotheses are plausible: that children with more complex handicaps (e.g. autistics) are also those with higher socio-economic status; that families with higher socio-economic status, education, and awareness, may be those which perceive the needs of the child more clearly, or are more ready to make demands on educational and medical services for repeated diagnoses and placements to meet the needs of the child as they perceive them.

For one placement only, there are fewer children in lower socio-economic groups (2 and 3) and more in the middle and upper groups (4 and 5, 6 and 7).

For two placements, there was a relative excess of children of group 2 and 3 socio-economic status and relatively fewer in groups 4 and 5, 6 and 7.

For three placements, there were markedly fewer children in group 2 and 3, and markedly more in group 4 and 5.

For four placements and over, there were markedly fewer children in group 2 and 3, and more in group 6 and 7.

4) Sex: Many more boys were unclassified (4 times as many boys as girls). There was an excess of boys with 5 placements; more girls with 3 or 4.

14.5.3 Number of Diagnoses

1) Age: There is a trend for older groups to have more diagnoses in proportion to own totals, in both the category of 1 to 2 diagnoses, and 3 to 4 diagnoses.

2) I.O.: The data suggest a bimodal (two-humped) distribution of scores, located at low ability level (I.Q. 50-79) and low average (I.Q. 80-99). Also, whereas the range of other I.Q. groups is from 1 to 3 or 4 diagnoses, the range of number of diagnoses is less for the 114 and over I.Q. group.

3) Socio-economic status The data suggest that there are relatively more with 3 or more diagnoses in socio-economic group 4 and 5, but relatively more with only 1 or 2 diagnoses in group 6 and 7, i.e. fewer diagnoses for higher socio-economic groups. This contrasts with the data for number of placements and suggests that increase in number of placements is not necessarily, or directly, related to increase in number of diagnoses.

4) Sex: As with the number of placements, significantly more boys were not recorded as having diagnoses. There was no significant sex difference in recorded diagnoses, but there was a tendency for more girls to have 3 diagnoses and more boys to have 5 or 6. Once again, there is greater variability for boys.

14.5.4 Year When Last Assessed

1) Age: In general, there is a strong, and statistically significant, tendency for the older age groups to have had earlier assessments; also, a wider scatter of dates of assessments, going back to 1968 or even, in individual cases, to 1963.

Those below 6 years of age, and the 6 to 9 year olds, were mainly last assessed in 1976, some in 1975, with scatter back to 1973. The 10-14 year olds were also mainly assessed in 1975-1976 but with significant numbers (15) in 1974; 9 in 1973; and scatter of dates back to 1968.

2) I.Q.: There is a significant relationship (probability .05 chi square) between I.Q. level and year of last assessment. The less able children have significantly earlier dates of assessment. The modal year of assessment in the main data is 1976, but there is a considerable range in the I.Q. groups 50-79. The range is from 1977 to 1966 for I.Q. group below 50; 1976 to 1963 for group 100-114 I.Q. As on other factors, there is a tendency for the upper I.Q. groups (114 plus) to have a smaller scatter of dates of assessment. It seems likely that children with different characteristics (including I.Q.) are assessed with different frequencies. It seems likely that the older and more retarded are those who were assessed longest ago. This suggests that their condition may be considered as established, that further assessment would not be useful. This

does raise questions, however, about the reliability and justice of such practices.

3) Socio-economic status The data suggest that relatively more in socio-economic group 2 and 3 (Blishen) were last assessed in 1976. Relatively more in group 6 and 7 were last assessed in 1975, and distinctly more in group 4 and 5 were last reassessed in 1974 and 1975. The range for the higher socio-economic groups is, however, less (back to 1973) whereas for group 4 and 5, the range is back to 1971. There is some indication that, although relatively more in group 2 and 3 were recently assessed, more were assessed before 1970 compared with the other socio-economic groups.

Socio-economic groups 2 and 3 are more likely to contain trainable and educable retarded children, from what is known of the distribution of intelligence with respect to socio-economic level. It is possible that a child with a professional/executive background (group 6 and 7) is more likely to have parents who ensure that his/her assessments are kept up to date, just as they may be more likely to seek alternative diagnoses, or placements which are most appropriate for the child. These differences in socio-economic pattern, however, are not statistically significant.

4) Sex There is a tendency for more girls to have been assessed recently (1976-1977); more boys to have been last assessed in 1975 or earlier. This is reflected in the sex ratios: 1 to 1.70 girls to boys in 1976-77; 1 to 2.60 for 1975; and 1 to 2.87 for 1974. There is, however, no over-all statistically significant difference.

14.5.5. Reasons for Placement in Present Unit

Because practically all placements were reported as being for one reason - availability or suitability of program - there were no significant associations with age, I.Q., socio-economic status, or sex as well as diagnostic category. There was a slight tendency for more girls to be placed in a unit to meet specific language needs.

14.5.6 Number of Types of Record on Child

1) Age There appears to be a tendency for the younger age groups (below 6 and 6-9 years of age) to have proportionately more records, when over 5 records are tabulated. There is, however, no statistically significant relationship to age in total.

2) I.Q. There is little difference between I.Q. levels in numbers of records per child. The modal number is 3 records per child for the Total Group. The range of records seems to be smaller for 114 plus I.Q. group (from 2 to 4 records) whereas the range for other I.Q. groups is from 1 or 2 to 7 records.

It will be recalled that the 100-114 I.Q. and 114-plus I.Q. groups, in particular, tend to have a smaller range in respect to other characteristics such as number of diagnoses or previous placements.

3) Socio-economic status There is no significant association between socio-economic status and number of types of records.

4) Sex Little was observed in the way of significant differences, though the usual difference in range emerged, i.e. more girls had fewer records (1 to 3) and boys had more (5 to 7).

14.5.7 Types of Data Available on Children

As noted, the majority of children in the study were recorded as having an Ontario Student Record (over 80 per cent). More specific records: psychological, speech pathologist, audiologist, etc. amounted to only 10 per cent, and minute proportions of classroom/school records for psychiatrist or paediatrician. Therefore, no age, I.Q., socio-economic or sex differences were demonstrable.

14.5.8 Factors in Diagnosis and Assessment

14.5.8.1 Record of Check on Hearing

1) Age The age-distribution for an affirmative response on check of hearing shows no significant difference across age groups, except for a slightly lower percentage under 6 years of age. This may reflect slightly increased, or more complete, assessment of hearing with increasing age.

2) I.Q. The higher the I.Q. the greater the probability of hearing being checked (viz. 75 per cent of I.Q. 80-114 plus, contrasted with 42.2 per cent of I.Q. 50-79).

If this is a real, as distinct from a sampling, effect, it raises an interesting question. Why should the less able have fewer hearing checks? Should not hearing be checked, whatever the child's level of ability? Is it not even more important to establish the level of potential hearing handicap in children of lower ability? The statistics may well reflect, however, the inclusion of a group of hearing-impaired children from schools for the hearing handicapped, who are of higher average ability than children from other handicap groups in the Total Group studied.

3) Socio-economic status Proportionately fewer group 2 and 3 (compared with the Ontario distribution of socio-economic status given by Blishen) have an affirmative response for hearing checked. This finding runs parallel with that for differences in I.Q. level between socio-economic groups.

4) Sex Proportionately more girls than boys had hearing checked (proportion 1 to 1.9 instead of expected average proportion of 1 to 2.25). A greater proportion of boys was not recorded at all.

General comments on this section: Although the data refer to different, independent categories, there are suggestive trends (not necessarily statistically significant singly, but repeatedly found) to show that particular groups have better records kept and possibly more effective attention. They may be children in: higher I.Q. groups, higher socio-economic groups, and girls as compared with boys. There is a tendency, too, for boys to have fewer records, in this study, for a number of variables.

14.5.8.2 E.E.G. and Neurological Examination

It will be recalled that 86.4 per cent of E.E.G. data were "unrecorded" in school records, and that 88.9 per cent of neurological data were also "unrecorded". Hence only 48 to 58 children are subject to this analysis.

1) Age: The highest proportion with "yes" for E.E.G. were in the 6-9 and 14-20 age groups. Findings were similar for neurological examination.

2) I.Q. The number of children recorded was 58. The highest (I.Q. 114 plus) and the lowest (I.Q. 50 and under) levels had the highest number of entries for E.E.G. data, but the "zig-zag" pattern across ages suggests random variation. The pattern is similar for E.E.G. and neurological records.

3) Socio-economic status Numbers are too small for analysis.

4) Sex No significant difference was found, but more girls did not have an E.E.G. record, and more girls did not have a neurological record. This suggests that fewer girls may be suspected of having neurological dysfunction, which would be consistent with previous research.

14.5.8.3 Birth History; 60.6 per cent of data were unrecorded

1) Age: The majority category in the Total Group is "perinatal" difficulties. The pattern of prenatal/perinatal/premature difficulties showed little variation in different age groups.

2) I.Q. The lower I.Q. groups have a higher proportion of prenatal handicap than the Total Group. The "below 50" I.Q. group have an excess of perinatal difficulties and prematurity. But the "114 plus" I.Q. group also have a marked excess of prenatal and perinatal difficulties compared with the Total Group average. This is another example of a bimodal distribution involving the I.Q. upper and lower groups. The 114 plus I.Q. group may be the brighter children who are handicapped because of neurological/developmental difficulties, hearing handicap, specific language disability. In another connection (parental interviews) evidence came to light that the language disordered children placed in Bedford Park Public School (Toronto) tended to have more developmental/neurological handicaps.

3) Socio-economic status There appears to be a marked under-representation of group 2 and 3, and over-representation of 4 to 7 in the normal birth category, as compared with the Ontario distribution of socio-economic groups (Blishen) and with the average distribution for the whole group. Among the prenatal difficulty group, there was an excess of socio-economic group 2 and 3 but a much lower proportion of group 2 and 3 had perinatal difficulties. Conversely, proportionately more group 4 and 5 (and to some extent 6 and 7) had perinatal difficulties. The social class gradient is therefore found in the recorded extent of normal births, and also in the occurrence of prenatal and perinatal difficulties, but with opposite trends.

4) Sex Many more boys were recorded as premature (sex ratio 1 to 6.3 instead of the expected 1 to 2.25) but the sexes were similar for normal birth records.

14.5.9 Test Score Data: verbal/non-verbal discrepancies

As noted, with 87.5 per cent of data unrecorded, this question is strictly limited in validity and reliability.

1) Age Despite very limited figures, there is a significant association (.05 level chi square) between age and amount of discrepancy between verbal and non-verbal ability scores, i.e. the older the child, the greater the discrepancy.

2) I.Q. On 46 recorded cases, there seems to be a higher proportion of the larger verbal/non-verbal discrepancies at the higher score levels (viz. I.Q. groups up to 79 versus 80 to 114 plus).

3) Socio-economic status There were too few cases for interpretation.

4) Sex Proportionately more girls were found in higher levels of discrepancy (25 plus points of I.Q.). The sex difference was not statistically significant. Once again, a higher proportion of boys had unrecorded data.

14.5.10 Discrepancy of Language Age and Chronological Age

1) Age Among the "below 6 years" group, the modal discrepancy is 2 years (35 per cent of own total). Among the 6-9 group, the modal discrepancy is also 2 years, but with higher proportions at 1 year, 3 years, and 4 years than for the "below 6" group. The modal frequency for the 10-13 years group was 3 years (11.3 per cent only) but the range was from 2 to 5 years. The modal frequency for the 14-20 group was a 6 years' discrepancy, but based on very small numbers. This last group had a wide range of discrepancies.

There is a significant relationship (chi square) between amount of language discrepancy and age level, i.e. the language versus age discrepancy increases with age. This would be expected in any absolute measure, such as comparison of chronological age, if the child grows older but his language level remains constant, or increases much more slowly. Previous studies (see Introduction) show this to be true of children with significant/severe language handicap.

2) I.Q. There is no significant statistical association between I.Q. and degree of discrepancy. However, the discrepancy between language age and chronological age tends to be greater in the lower I.Q. levels. Thus, the median discrepancy is 4 years in the I.Q. 50 group; mid-3 years in the I.Q. 50-79 group; but only 2 years in the I.Q. 80-99 and I.Q. 100-114 group. The I.Q. 50 group also has the greatest range in extreme discrepancies (9 or more years). Eight children of the 133 recorded (6 per cent) have discrepancies of 7-8 years; 7.5 per cent have discrepancies of 9-10 years between age and language levels.

3) Socio-economic status Very low figures are recorded since both variables involved have such high rates of non-recording.

4) Sex The sex ratios suggest that an unexpectedly high proportion of girls have language discrepancies ranging from 1 to 11 years. There are proportionately more boys with discrepancies at 5 years and at 9-10 years, i.e. the boys appear to follow a bimodal distribution, falling into two groups.

14.5.11 Scores on Specific Language Tests

1) Age There is a significant association (.05 level chi square) between age and distribution of kind of language deficit, as revealed by specific tests of language. All groups have poor expressive language as the most frequent characteristic.

The below-6 year olds have poor receptive language; the 6 to 9 and 10 to 13 age groups have poor comprehension; the 14-20 year olds have poor comprehension and poor vocabulary. Rutter & Martin (1972) point out that receptive difficulties are mainly found in young children and disappear with age. This may be illustrated here. The 14-20 group may contain a higher proportion of mentally retarded adolescents, and also of severely hearing-handicapped and this may account for the low comprehension and vocabulary scores.

2) I.Q. The below-50 I.Q. group have poor vocabulary, followed in rank order by poor comprehension. The 50-79 I.Q. group have poor comprehension, followed in rank by poor expressive language and vocabulary. The 80-99 I.Q. group have poor expressive language and vocabulary followed by poor comprehension. The 100-114 plus I.Q. group show receptive and expressive difficulties.

3) Socio-economic status In a total of 62 cases, there appears to be an excess of socio-economic group 2 and 3 with receptive difficulties. There are relatively more expressive difficulties in group 4 and 5.

4) Sex There were relatively more boys with poor receptive and with poor articulatory skills, and more girls with low vocabulary, poor syntax or poor comprehension.

Receptive difficulties therefore appear to have weak but interesting relationships with: younger children, lower I.Q., lower socio-economic class and male sex.

14.5.12 Grades in Reading (The number recorded was 65.)

1) Age No clear indications of age differences were found, but there is the expected tendency for the 6 to 9 age group to have a predominant number with only Grade 1 reading and for the 10-14 age group to range over Grade levels 1 and 2 and 3 (most at Grade 3) while the 14-20 year olds ranged over Grade levels 1 to 5 (with more at Grade 4, 5 and 6).

2) I.Q. Only 36 cases were recorded. No significant association was found between I.Q. and reading (chi square). The below 50 I.Q. all had Grade 1 reading level; the other I.Q. groups scattered from Grade 1 to Grade 5.

3) Socio-economic status There were too few cases for meaningful analysis.

4) Sex There was a tendency for more boys to have Grade 1 and 2 level and range up to Grade 4; more girls had Grade 5 and 6 level. This is expected from previous research which indicates that girls tend to have higher verbal and reading levels than boys.

14.5.13 Kinds of Tests Used

1) Age On the eight tests or checklists most frequently used, there was a highly significant association (chi square) between age and usage of particular tests. For example, relatively more Peabody tests were used on the 6-9 and 14-20 age groups. Relatively more W.I.S.C. tests were used on the 10-13 age group and slightly more Stanford-Binet tests on the 14-20 age group. The Reynell and Carrow tests of language competence were more frequently used on the under-6 group, and the I.T.P.A. was also used more frequently on this age group.

It looks as if tests, with norms up to age 6 (the Reynell and Carrow), are perceived as more relevant for use with young language-handicapped children. The I.T.P.A. norms range, in different subtests, up to 7 or 11 years of age. This test also might be perceived as more appropriate to younger children. The W.I.S.C. also (for language-handicapped and possibly lower-ability groups) would be most discriminating in the middle of its range, at around 10 years.

2) I.Q. There was a highly significant association between I.Q. and kind of test used. For example: special classroom tests were used more frequently for the low I.Q. groups (below 50 to 79 I.Q.). The Peabody test was used more frequently by the I.Q. groups above 50, and the Stanford-Binet below I.Q. 50. Again, the Stanford-Binet has a much lower "basement" than other tests, i.e. down to age 2, and provides samples of motor, perceptual and other manipulative skills which can be more appealing and relevant to young and retarded children; its most verbal element begins at the 7 year level.

On the other hand, there must be concern that important evaluations depend on the Stanford-Binet, which is a composite of many different abilities and quite unsuited to obtain precise measures of language vs. non-verbal function.

3) Socio-economic status There was a significant association between socio-economic status and kinds of test used. There was more use of the Stanford-Binet at the two extremes of the socio-economic scale, Groups 2 and 3, and 6 and 7. There was relatively more use of the W.I.S.C. and Reynell tests in the upper socio-economic groups. There was much more use of special classroom tests and checklists for the lower and middle socio-economic groups.

4) Sex There was no significant association between sex and kind of test used. Relatively more boys had the Stanford-Binet, Carrow and Reynell tests, and specialized tests/checklists.

14.5.14 Total Number of Tests Used

In total, 70.4 per cent of children whose tests were recorded had had up to 4 tests.

1) Age Basically 2 to 3 tests were the most frequent number at any age. There was no significant relationship between age and number of tests applied to child.

2) I.Q. There was no significant association between I.Q. level and number of tests.

3) Socio-economic status There was an association (significant between .02 and .05 level, chi square) between socio-economic status and number of tests. Proportionately more tests were used on children of middle and higher socio-economic level, especially in group 4 and 5.

4) Sex There was no significant association between sex and number of tests.

SUMMARY

It is difficult to summarize adequately and briefly the complex and interesting relationships described in this chapter.

It will be recalled that the educational system was asked to identify the children with language difficulties and the programs which served them. It is clear that a range of programs, with other labels than "language disorder", may contain children with language difficulties. Conversely, children with other significant handicaps may also be found in programs for the language-handicapped. This confirms the assumptions made at the beginning of the study; it emphasizes the importance of casting the net wide in attempting to identify and help children with language handicap.

This is a confirmation of the assertion of the S.E.E.C. Report, that disability in communication cuts across all handicap classifications.

The second general statement is that language-handicap groups are variable and heterogeneous in their characteristics. Even when the more narrowly-defined language-disorder group, including aphasics and autistics, is examined, it is found that the group is heterogeneous. This confirms previous findings (Rutter and Martin (1972); Menyuk (1969)). As Crystal points out, even two children with apparently similar language levels may differ markedly in the pattern of their disabilities.

This has implications for identification, for planning placement and treatment. In particular, conclusions point to the need for a variety of programs to meet the variety of needs of children.

The low average intelligence level of the language-handicapped group was unexpected, in view of classical definitions of specific language impairment as being found in groups which fall within the average range of ability. Even when the language-disordered group was analyzed separately, ability level was found to fall within the slow-learning educable retarded range, with considerable bias to the lower I.Q. groupings.

Some groups (such as the autistic) included in the language-disordered group, have a majority of low-functioning members. There is no consistent evidence that the language-disordered group falls within the middle or upper range of ability. Indeed, Stark (reported by Eisenson (1972)), found older (7-8:11 year old) aphasic children tested at the Institute for Child Aphasia, Stanford University, had mean non-verbal I.Q.'s as low as 73.1 to 79.4.

Analyses of membership of schools and types of class, reported in the following chapters on program, show that a high proportion of classes for language-impaired children in this study are classified as "opportunity", "slow learner", etc. It is also significant that analysis of the training of teachers in present language programs shows that a majority come from backgrounds connected with slow learners.

This whole issue is worthy of more detailed review, e.g. specific standard testing of the "language impaired" group.

This study also illustrated the interesting but complex effects of age and socio-economic status on the needs and characteristics of the language-handicapped child.

It did not provide good evidence for the neurological basis of language handicap; rather, it found a considerable paucity of records concerning neurological handicaps. There were, however, some hints in the data on difficulties of birth, and their effects, which would be worthy of more accurate recording, analysis and further study.

The study suggests, in general, that the language-handicapped child is identified formally and placed in special education at about age 6. Only a minority of children are identified or treated at the pre-school level. This identifies present practice within the educational system. It raises questions about the need to identify, diagnose and place children who may have language handicap at a much earlier age. As Eisenson and Ingram (1972) emphasize, the child who has not acquired speech by 3 years of age, or who has acquired 50 words without being able to organize language beyond the one-word level, is clearly language-handicapped or delayed sufficiently to need intervention.

The study identified a number of gaps in the information (as recorded by the school/facility) about significant aspects of the handicapped child: a) ability level b) specific language level c) pattern of language handicap d) assessment of hearing loss, and e) possible neurological dysfunction.

Case-records of children varied considerably in their comprehensiveness and adequacy. It was concluded that there is a case for establishing a coherent and comprehensive standard record/reporting form for this group -- and possibly for all groups -- of handicapped children.

15 Language Behavior of Children

15.1 Specific Language Behaviors

Teachers were asked to rate specific language behaviors of children on Schedule 3/1. This was aimed at giving a picture of the language development level and specific problems of each child, and, in summary, a picture of language levels in the whole sample.

There were coding difficulties in relating this individual information from a different schedule to the individual characteristics of children recorded on Schedule 1/1. The entries were, therefore, cross-tabulated like the data from Schedules 2/1 and 4/1, by school type.

The information given here is the straight frequencies across all school types for the total handicapped group. The relative crudity of the data did not really justify a more complex analysis. The items have been arranged to form a rough "scale" in terms of frequency of response (i) yes and (ii) yes with specifications.

Language Scale (Schedule 3)

Item		Yes	Yes (with specifications)	Total
15A	Responds to name (spoken)	91.8	3.1	94.9
11	Orients/responds to sounds	84.2	2.9	87.1
18A	Responds to isolated words	84.2	8.6	92.8
15B	Responds to name (written)	83.9	4.3	88.2
12	Orients/responds to voice (specify)	82.2	5.8	88.0
18B	Responds to isolated utterances	82.0	9.9	91.9
35	Responds to pointing, gestures	81.3	4.1	85.4
16	Responds to spoken commands, gestures, e.g. "No"	80.4	10.2	90.6
13	Responds to presence of adult/ child (specify situation, response)	76.7	8.8	85.5
33	Repeats own name when this is used	76.5	7.7	84.2
18C	Responds to isolated sentences	76.1	16.4	92.5
14	Responds to gestures in a "bound" or habitual situation, e.g. shaking hands	75.0	6.5	81.5
17A	Responds to directions, e.g. "Come here"	72.2	22.2	94.4

Item		Yes	Yes (with specifications)	Total
20A	Makes sense of spoken language (Comment at what level 3 and below - 20B)	71.9	15.1	87.0
43	Can make actor-action statements e.g. "Doggie's eating"(bone)	70.7	11.9	82.6
39	Evidence of spontaneous speech to indicate need	68.5	11.0	79.5
96	Identifies action pictures	67.6	12.0	79.6
42	Can make "stative" comment, e.g. colour, shape: "That's red"	67.4	16.4	83.8
23A	Follows statement of sequence e.g. then, tomorrow	65.7	15.0	80.7
34	Uses I/you	65.6	17.0	82.6
27	Utters sounds/gestures to indicate need, attract attention	62.5	8.9	71.4
49	Uses articles "a/the"	62.5	8.4	70.9
23B	Child follows cause/effect statements (if/because)	62.1	16.1	78.2
62	Child communicates with adult verbally/by sign	61.6	23.2	84.8
37	Imitates gestures in a purposeful way	60.2	7.3	67.5
41	Uses 3/4 word sentence to express feeling, attract attention	58.2	24.4	82.6
64	Child uses language to regulate behavior, e.g. comment on what he is doing, announce intentions	56.5	13.3	69.8
23C	Follows statements of location, "There", etc.	55.7	23.7	79.4
38	Points/gestures and names object/person	53.8	17.1	70.9
32	Can repeat speech sounds to order	52.8	31.7	84.5
63	Child communicates with other children (play, meals, etc. Verbal/sign/gesture)	52.3	26.9	79.2
21A	Can read letters of alphabet	52.2	25.6	77.8
24	Uses toys/models to communicate feelings/relationships, e.g. acting out incident, using puppet	51.4	19.0	70.4
47	Can use prepositions	51.4	27.2	78.6

Item		Yes	Yes (with specifications)	Total
48A	Uses plurals (regular) correctly	50.5	19.2	69.7
46	Uses connectives (and, but) between words, phrases	50.5	20.7	71.2
22	Uses gestures related to situations e.g. toilet needs	50.0	19.7	69.7
30	Produces approximate words e.g. "boo" for "book"	47.9	35.9	83.8
98	Tells stories	46.6	31.8	78.4
31	Uses words/utterances clearly but not necessarily in communication, e.g. singsongs, repeats words	43.8	22.2	66.0
36	Imitates gestures of adults/children but does not communicate freely with them	43.5	13.2	56.7
28	Echoes sounds of adults/children, or own sound	42.4	16.9	59.3
25	Makes noises (specify kind, circumstances, significance)	42.3	29.2	71.5
19	Responds to sign language (specify)	40.9	24.7	65.6
21B	Can read words	39.6	32.8	72.4
21C	Can read signs	36.6	23.6	60.2
61	Child uses monologue accompanying action	34.1	12.5	46.6
48B	Uses correct (irregular) plurals	33.3	23.9	57.2
45	Uses tenses (which?)	33.3	10.6	43.9
53	Uses connectives between utterances, e.g. "He went and he came back"	31.3	18.7	50.0
44	Uses correct verb forms for first and second person and plural	30.9	28.3	59.2
52	Approximates normal articulation (pitch, rhythm, order of words)	29.1	13.9	43.0
29	Echoes sentences, utterances	28.7	34.1	62.8
21D	Can read sentences	26.1	41.0	67.1
17B	Responds to directions, e.g. "Hit (the) ball"	11.3	15.1	26.4
	Arithmetic Mean -	56.5	17.9	74.4

It will be observed that, for many of the items, "yes with specifications" is a high proportion of response. If this percentage is added to the "yes", clearly many of the items are passed by many more children, to the extent of 17 per cent more, on average. Items with a higher percentage of "yes with specifications" responses may also be less precise items, or may depend very much more on the situation in which language occurs. A more stable proportion is obtained by adding the two as in the total.

15.2 General findings on language level and fluency are of interest.

On Question 59, 40.1 per cent of children were recorded as using language for meaningful communication at some level; 28.7 per cent used it mechanically or because conditioned to do so, and 1.4 per cent used language sometimes or in a limited sense.

On Question 60, there is confirmation of this finding: 43.6 per cent of children used a variety of language patterns and 28.3 per cent used set or rote formulas.

On Question 55, which asked for length and complexity of sentence, the following pattern emerged:

No. of words -	1	2	3	4	5	6	7	8	9	10	11 to 16
Per cent	4.1	4.7	12.8	17.6	17.6	14.2	6.1	10.1	2.7	5.4	3.5

There were 21.6 per cent of children with sentence length of 1 to 3 words, i.e. at 2½ to 3 year level in language. The majority have sentences of 4 to 6 words long (49.4 per cent) or longer.

On Question 54, the range of sentence patterns which was recorded was:

	Per Cent
Simple: subject-verb-object	20.9
Simple, plus questions	13.2
3-4 varied patterns	14.7
Normal in rote/familiar context	2.1
Normal (for age)	5.8

Question 50 asked about speed of production of language. It was judged to be:

Normal	31.1 per cent
Slow/stilted	26.2 per cent
Rapid	16.8 per cent

On Question 51, 44.6 per cent were recorded as having normal intonation, pitch and stress in speech, and 20.6 per cent normal with qualifications.

On Question 52, approximation to normal articulation, the results were:

	Per Cent
Normal articulation	29.1
Poor articulation	13.9
Unintelligible	2.8
Specific articulatory problems	13.9
Other	10.8

Unintelligibility was found mainly in extremely handicapped hospital groups; poor articulation in the young and autistic children, and specific problems among the pre-school, trainable retarded, and residential unit groups. It is of interest that unintelligibility is of the same order as reported by Rutter and Martin (1972) among surveys of speech/language delay in children entering school.

On Question 57, 23.6 per cent of children are described as having language/speech defects; 70 per cent of data are "not available".

The varieties of speech/language defect are, on Question 56:

Lisp	4.1 per cent
Confusion/substitution	27.4 per cent
Omission	8.5 per cent
Normal	8.8 per cent
Not available	46.4 per cent

It was possible to code judgements of each child's expressive language age. The facts are as follows: (Recoded Question 59/170)

Age	1/2	3	4	5	6	7	8	9	10	11	12/14
Per cent	13.6	11.8	10.9	11.8	8.2	8.2	8.2	6.4	5.5	3.6	9.0

So, 25.4 per cent of children in this study are judged to have language levels of 3 years or under, and 36.4 per cent have language ages up to 4.

Four and a half years of age (see discussions in Introduction) is the level at which most children are considered to have first mastered syntax; if an older child is significantly below this level, he has language delay/disorder.

It will also be recalled that the majority of children were in the 6-9 and 10-13 age groups; but only 18.1 per cent were rated here as having language levels of 10 to 14, and 31 per cent as having language levels of 6 to 9, as compared with 48.1 per cent with language levels under 6 years of age. By inference, this confirms the discrepancy in this group, between age or mental level and language level, as noted in previous chapter.

A caution here: this table was based on 110 cases -- 288 are missing.

Recoding of two other questions gave further information. The child makes sense of spoken language (Question 20B, different age levels) as follows:

Language age level	0-2	3-5	6-8	9-11
Per cent	63.6	18.3	15.1	12.0

In other words, 63.6 per cent of the 110 cases were at the 0-2 language age level.

The child uses language for meaningful communication, i.e. not in rote/conditioned ways, as follows (Question 59B, level of response age level):

Language age level	0-2	3-5	6-8	9-11	12 plus
Per cent	76.1	9.5	6.8	4.3	3.3

The contrast here is between receptive response (20B) and expressive use (59B). There is some 10 per cent difference in level.

15.3 Comparison of Main Sample with Mail Sample

The data from the same items administered to the mail sample, confirm the results on the detailed questions on language behavior.

Proportions of "yes" answers are similar; more important, the rank order of the items is very similar. It was noted earlier that to add the "yes" and "yes qualified" responses would be likely to give a more valid and reliable result.

Mean proportion of responses on 56 items in main and mail samples are as follows:

	Yes	Yes qualified	Total
Main sample (above)	56.5	17.9	74.4
Mail sample	62.3	17.5	79.8

These results are remarkably close and confirm the consistency of the data between the two samples. The two sources of evidence were quite independent (intensive interview vs. mailed questionnaire).

The main sample contained many more special programs with severely language-handicapped children. The mail sample was 80 per cent composed of language programs in regular elementary schools. This would account for the higher percentage of "yes" response to questions on language behaviors. The close similarity of response pattern and level confirms that the same language-handicapped population is being observed and recorded, despite the differences in technique and in sampling program.

Subtracting the 74.4 to 79.8 "Yes total" responses (i.e. those children able to cope with the language skills)from 100 leaves 20 to 25 per cent of children who fail to pass these items and presumably have severe language disability.

For comparison, the distribution for regular elementary school language classes is extracted:

Language age	1/2	3	4	5	6	7	8	9	10	11-14
Per cent	10.6	10.5	15.8	15.8	14.0	12.3	8.8	7.0	5.3	.00

Except for slightly more children at the upper language levels, the figures are similar. Indeed, 36.9 per cent of children are rated as having language ages of 4 or lower, as in the total handicap sample. Pre-school, hospital, and programs for mentally retarded have lower levels of language, e.g. in the 2-5 year range, but they, too, scatter over a wide range.

It is of interest to compare these findings of sentence length (Minimum Length of Utterance), variety of sentence patterns, and levels of receptive and expressive language with the research findings, e.g. the table describing stages of development in language structures (Crystal et al)in the Introduction, and similar norms given by Lee (1974).

15.4 The Severity of Language Handicap: Conclusions

These findings illustrate the severity of language handicap among these children. The statistics vary from question to question but have a strong consistent trend. They indicate that from 25 to 35 per cent of children, in the sample, have markedly immature or deficient expressive language, disorders of speed, fluency or articulation.

Even the "normal" group of 40 to 50 per cent is, in this context, unlikely to be at normal levels of language development, as the distribution of estimates of expressive language shows.

15.5 Interpretations of Data: Cautions

With varying reliability of data (missing cases ranged from 6 to 288, though the high extreme is an infrequent one), caution must be exercised in interpretation. Furthermore, fairly small numbers are distributed over a large number of school/program categories so that interpretation of differences between these categories is complex. It may not be statistically significant or stable for any given relationship or table. It did not appear profitable, at this stage, to make a more detailed analysis.

Nevertheless, 58 of the questions, a majority, indicated significant differences in response between the different school categories. This significance (chi square) was at the .01 to .001 or beyond level of significance. One note of caution is that, with such small and scattered figures as occurred in many data, the estimate of the chi square, by the mechanical procedures of the computer program, is likely to be inflated. Even so, probabilities are high enough to justify assuming there is a significant effect. Even more important is the repeated findings and their consistency with one another.

Subject to the above comments, it emerges that, as expected, children in different programs are likely to differ in level and kind of language handicap. Consistently, the younger (pre-school groups) the autistic (especially in special residential settings for the severely handicapped) and aphasic groups show more severe delay/disorder.

15.6 Omission of Data

In the original schedule, it was hoped that the research team, working with the teacher, might make observations on play where appropriate, and also get direct measures on specific items of language response. With the demands for time made by the total survey, it proved impracticable to complete this section consistently, so it was omitted from coding and analysis. (Questions 65 to 98) The "autistic" scale, Item 71, was used to help determine diagnostic category. Item 72 on "open" or "structured" interaction with the child was related to schedule 4/1 and observations to help the research team arrive at a description of the nature of the classroom program.

15.7 Summary

In line with the general philosophy of this study, the concern was to examine the data from several different perspectives, and to establish consistency of pattern. This consistency of pattern comes out clearly in this analysis of children's language behavior. This is a group with severe language difficulties even when taken as a total handicap group -- all varieties of handicap sharing a significant language handicap -- or in different school programs. The more specific language-disordered groups are likely to share many of these characteristics, but be even more severely handicapped.

16

Introduction to Chapters on Programs

16.1 The program is dealt with in the following two chapters. As emphasized, this is an educational, not a psychological, study. The program (curriculum) consists of factors such as the goals of teaching (enunciated and actual), the content and the sequence of what is learned. It covers the instructional preferences (e.g. for more direct vs. indirect methods of teaching or forms of motivation) of the teacher and the instructional procedures of the teacher. It also refers to the actual choice and use of materials, learning situations, and teaching aids.

16.2 Teaching and learning must also be organized in terms of the allocation of time to different kinds of phases of learning, timetables, the allocation of teaching resources, the grouping of students for instruction, and the choice and arrangement of teaching equipment and use of space.

16.3 The program cannot be interpreted in educational terms unless it is set in the context of the numbers and kinds of children, the teachers' experience, qualifications and background, and factors such as student-teacher ratio.

The more specific curricular and instructional aspects of the program are dealt with in Chapter 18. The information for this chapter is drawn mainly from responses to Schedule 4/1, as well as from direct observation of classrooms.

To put the remedial program in its proper educational and organizational context, Chapter 17 precedes the discussion of program; it describes the schools or institutional settings (as presented through the eyes of the principal or director), the goals of the school and of individual program, data on children, teachers, and on organization of groups and resources by the school. Information is drawn from two sources: Schedule 2/1 (the school or institution/principal) and in part Schedule 4/1 (the individual teacher/program level). It will be realized that these two sources of information should be consistent, but that they can, and do, present the program from two rather different perspectives. At times these are sources of confirmation.

16.4 In all the above, the term "principal" may be replaced by "director" (educational or clinical), head-teacher, consultant, therapist in charge, etc., i.e. the person in most obvious direct administrative (plus educational or clinical) charge of a facility (school, centre, institution, etc.). The actual status of the "principal" answering Schedule 2/1 and the social-administrative "distance" (i.e. whether the principal knows intimately, takes part, etc.) of this level from that of the individual teacher or therapist answering Schedule 4/1 depends on the size of the institution, its complexity, whether or not the program in question is a large part of its purpose and function or only a small part — as in a large elementary school, for example.

The term "teacher" may also be replaced by therapist, consultant, child-case worker, etc. as the function in a particular setting.

16.5 Since this was the school and individual program level of analysis, it was decided to classify responses by "school type", i.e. the major classification of facility encountered in the study, and recorded by the research team as a primary variable. As noted, it is possible, but difficult (both in terms of statistical analysis and in making firm and consistent correlations), to analyze programs in terms of individual children's characteristics, e.g. diagnostic category. Later comments indicate how inferences from the individual level can be related to the school and program level. A "school" or "class" and many aspects of program are more objective and stable than are individual characteristics such as diagnoses; these latter categories may be more (or less) arbitrary classifications based on inferences from primary data.

16.6 Expanded comments follow on the definition and significance of the "school type". There were 92 basic units (facilities) visited in the study.

1) Regular (Elementary and Secondary) school in which classes or units were found, or individual children, or small groups, receiving specialist resource help. The major category is Elementary schools since only one Secondary level unit is recorded consistently.

This enables cross-reference to Chapter 14 where children are analyzed in terms of age-distribution, and this, in turn, cross-related to their sex, socio-economic status, ability, and diagnostic category.

It is clear that the Regular settings contained the majority of language-handicapped children. The majority of "language disordered" category analyzed in Chapter 14 must be found in these schools. Analysis of the composition of classes within these schools, given later, reveals from another point of view the heterogeneity, not only of individual children, but indeed of classification of teaching groups/treatment provided for them.

2) Hospital refers to both of the following: A Bliss Symbol program (Crippled Children's Centre, Toronto) for cerebral-palsied/crippled children; and a small day program in total communication (Clarke Institute for Psychiatry, Toronto) for autistic/low functioning children.

In a "diagnostic" grouping, the two groups would be separated; they would not only form very small groups but introduce complications into a "diagnostic" grouping, i.e. of mixing information on low-functioning autistics with information on other autistic children from day schools. In the diagnostic categories for individual children, in Chapter 14, the "autistic" group contains this variety (day regular, residential, hospital, etc.)

3) Regional Centre is, in fact, one centre -- the Thistletown Regional Centre (Toronto) -- but refers to different programs within this:

(i) the autistic and language-disordered children within the pre-school and day school programs of this regional hospital centre which serves, on an active treatment basis, the needs of children with severe behavioral/emotional and associated disorders who cannot be treated by non-residential means,

(ii) the much smaller and intensive group programs in residential "cottage" settings, viz. House 17 and House 20, mainly for autistic and severe behavior disorders. These are conducted by means of one-to-one behavior modification and therapeutic teaching/management. There are different approaches in Houses 17 and 20.

A Thistletown residential program produced much of the information on the Distar program coded in the present analysis, and they are heavily represented in the statistical data on behavior management techniques. In the diagnostic categories for individual children, they contributed mainly to the "autistic" category and to instances of specific emotional disturbance (childhood schizophrenia) and brain-damage.

4) Developmental Centres, represented by 5 respondents or programs in two institutions, are facilities for pre-school and young children who are severely mentally retarded or, rather, severely "developmentally disabled". The group can comprise a great variety of syndromes, and include physical as well as mental handicap. Great care was taken, in selecting children from these centres, to discuss the study criteria with teachers, speech therapists, and other professionals, and to choose only children who had language deficits either separate from, or contributory to, their other severe handicaps. This group of facilities (not separately emphasized in the statistical analysis) provided a group of young mentally retarded children. These centres are outside the educational system, in the strict sense. They are provided by local associations for the mentally retarded with funding from other sources, such as the Ministry of Community and Social Services, or they may be set up as part of a community service. Staffing is likely to be child-care worker and other professionals instead of, or in addition to, teachers.

5) Residential Provincial Schools refers to two schools for the hearing impaired. In one, Sir James Whitney School for the Hearing Handicapped (Belleville), there is a specific unit with seven classes for 42 diagnosed aphasic children who may, or may not, have significant hearing handicap (5 children with severe hearing impairment). In the other, in the Ernest C. Drury School for Hearing Handicapped (Milton), there are no specific classes for language-disordered children, but the study observed individual programs for 18 children with language handicap far beyond that expected from the norm of the hearing handicapped group. In the individual diagnostic category (Chapter 14) these children contribute to the "hearing handicapped" category and to the "aphasic" categories (of which the Belleville school forms a major part). Nevertheless, the two groups above have much in common, in terms of severe language disorder, and probably vary only in terms of label and of program.

6) Pre-school facilities are not regular pre-schools, but pre-school facilities for children with a variety of behavioral and develop-

mental difficulties (but not mental retardation). Those in the study are located mainly in the Metro Toronto area, viz. West End Creche (a clinic facility); Stothers Centre; Powell-Brown Remedial Nursery; Cecilia Smith Nursery. This category also included reference to a special nursery language program, the Chedoke Hospital facility, and another pre-school language-delay program.

Individual children with significant language delay or disorder were selected for study within the pre-schools, which had a behavior-disorder orientation. These facilities contribute many of the young or pre-school children in the individual analysis.

7) Trainable Mentally Retarded schools comprise programs (mainly for autistic children) selected from schools for the trainable mentally retarded administered by the Metropolitan Toronto Board of Education (with "total communication" language programs) but also schools in the Simcoe County area which were included because they contained the majority of children in the county's language programs. Both of these sources are in some sense, therefore, educational in administration. Nevertheless, they are not emphasized in the general analysis. It has been pointed out, in Chapter 14, that even when groups such as the trainable mentally retarded are eliminated from the analysis, the ability level of the "specific language disorder" group remains rather low and their heterogeneity high.

8) Other Residential Facilities is a residual category. Essentially it comprises Kerry's Place, a residential facility for late adolescent severely handicapped autistics (Clarksburg). This is an "active treatment" centre funded by the Ministry of Health but with two teaching staff provided by the local Board of Education. This facility contributes a small number of severely handicapped (low ability or low functioning) autistics to the individual analysis.

9) Other Language facilities is a complex residual group comprising a release-resource program in one board of education, i.e. individual and group remediation by speech pathologists, or speech teachers, also a clinical-school program, the Child Study Centre, University of Ottawa, which gives intensive residential and day treatment to children with a variety of behavioral and language disorders comprising special education and therapeutic support. They contribute to the language disordered and possibly a little to the autistic groups.

10) Mainly Autistic comprises two day classes for autistic children, one in Wellington County board of education and one in Waterloo County, also the program for autistic children in the McHugh School, Ottawa, a small day school housed within a regular public school, which presently (1977) serves the autistic children of elementary school age in the Ottawa region. The latter school is administered under the Royal Ottawa Hospital schools system, but is staffed by teachers and is essentially a small special school for autistic children. They contribute considerably, but not wholly, to the autistic group in Chapter 14.

11) Mentally Retarded comprises varied groups and programs from two regional centres for the mentally retarded, at Cedar Springs (Blenheim) and Huronia (Orillia). Sources for information and organization of the study, in both instances, were the chief speech pathologist. Programs studied covered a variety of severely mentally retarded or poor-functioning older children, adolescents, or young adults up to 21 years of age in a variety of language programs, not only direct language stimulation but alternative methods such as sign-language and Bliss Symbols. They contribute older individuals to the analysis. In general, the older age-group, i.e. over 16, in the individual analysis are likely to be drawn from the mentally low-functioning category. This group again is of considerable interest in respect of the variety of language programs being tried with them, and the varieties of technique for using staff for instruction. They are, however, not emphasized in the main analysis.

16.7 As noted in the Introduction to the report, language handicapped individuals and programs in the "mentally retarded" grouping, in developmental centres and regional centres, were included as a complementary group in this study. There are at least two reasons:

(1) The language programs developed for such children are of general interest for remediation of the language-disordered, judging by the analysis of programs presented by Fristoe (1976) and references by Schiefelbusch and Lloyd (1974).

(2) It is of interest to know the extent of language handicap outside the rather arbitrarily labelled "specific language handicap" grouping. Furthermore, the research data suggest that "language disorder", described as severe delay in acquiring language, has a similar course in many language disordered groups, i.e. retarded groups or language disordered groups acquire language in apparently normal sequence but with considerably more delay. Also, as noted, the distinction between mental retardation and low functioning in the autistic child is often arbitrary, requiring sensitive and accurate diagnostic differentiation. The low functioning autistic is, for all intents and purposes, mentally retarded as far as prognosis for learning and future vocational and social adjustment is concerned (Rutter (1971)). Some of the autistic children studied were found in facilities for the mentally retarded. For example, the "total communication" program organized by the Clarke Institute draws its subjects mainly from Toronto schools for the mentally retarded. The "total communication" in the McCordic School (Toronto) -- subject of a current contract research study for the Ministry of Education -- is within a facility for the trainable mentally retarded. As far as possible, data for these "mentally retarded facilities" and others, are kept apart, or distinguished in the statistical analysis and interpretation.

16.8 To re-capitulate:

1) Language delay or language disorder is likely to be found in all categories of school or program, in all categories of language and associated handicap. The majority are likely to be in the Regular school category.

2) Autistic programs are likely to be represented by Regional Centre, Other Residential, Autistic groups (and overlap into the Developmental Centre and Trainable Mentally Retarded facilities).

3) Pre-school groups represent language delay, but also possible language disorder, a scattering of autistics and behavioral handicaps.

4) Aphasic children labelled as such are found mainly in the Residential Provincial school program and in the Bedford Park (Toronto) day program, which is included under Regular elementary school, as well as being scattered over other regular and clinical programs (not, however, Hospital or Regional Centre, Other Residential, or Other Language Program).

5) The Bliss Symbol program is found in the Hospital category (60% of entries for this) but also in at least one other class (Chedoke/Hamilton Board of Education) and scattered over other programs, notably the mentally retarded. The video-tape of a Bliss Symbol program recorded by the study was based on the Chedoke/Hamilton Board cerebral-palsy class.

6) Sign and total communication is found not only in schools for the hearing handicapped but several other facilities, viz. autistic, mentally retarded, but not likely to be found in Regional Centre or in high proportions in the Regular schools.

7) The Developmental Centre, Trainable Retarded and Mentally Retarded categories comprise language disordered, possibly a fraction of aphasic children, and autistic individuals.

The variety and heterogeneity revealed in any diagnostic grouping or description of language delayed/language disordered children (cf. Rutter and Martin (1972); Crystal (1976)) is reflected in the varieties of grouping, class and program for them, and in the variety of pattern found even within any grouping such as the "Regular" school, or even within a given class type.

16.9 Information on Class Programs

Information was gathered and coded on the kind of class in which language handicapped children were found within a facility or school. The kinds of class are noted later.

A more sensitive and detailed classification and analysis of programs would be by type of class. However, this was not judged to be practicable at this stage. Essentially, the variety of classes (25 categories) was such that it certainly described functions specifically, but at the cost of splitting the data into too many groups and so creating small unstable numbers and losing generality. Any combination of classes could, at the present stage, only be done in an arbitrary manner, losing precision of information, viz. lumping slow learning with remedial. It seemed more practical to remain with the relatively well-defined and larger "School Type" classification in analyzing programs. Nevertheless, the data permit of re-analysis at any future time in terms of "Class" types of program.

To find the relationship of Class and School Type, a cross-tabulation was carried out. This will enable the reader to interpret what kind of classes are included within a particular school type, and gather evidence on the likely diagnosis or educational category of children, or the emphasis in kind or level of program.

The Regular School category comprises: 24 (30.8 per cent of the school) "regular" classes, presumably of language disordered/delayed children. It has 17 (21.8 per cent) "special language/communication" classes. Other information on programs suggests that these cover a great variety of language handicaps, varying from class to class, and from one board of education to another, but possibly containing aphasic and autistic children in addition to a wide variety of general language handicap. "Other" types of class comprise 11 (14.1 per cent) and 10 (12.8 per cent) respectively.

Aphasic programs comprise 10 (12.8 per cent) of classes. Many of these are likely to represent the contribution of the 11 classes of the Bedford Park Public School (Toronto) day program.

The range of special education classes, in the Regular school, containing language disordered is illustrated in the following categories:

Withdrawal groups	8	(10.3 per cent)
Remedial groups	5	(6.4 per cent)
Mentally retarded	5	(6.4 per cent)
Specific learning disability	4	(5.1 per cent)

Special education (unspecified); Bliss Symbol program; hearing handicapped, behavioral and multiple handicap - (each 2 cases, 2.6 per cent).

In summary, the language and aphasic classes represent 40.6 per cent of the Regular school category, but opportunity, remedial and mentally retarded groups cover 19.2 per cent.

In view of the close connection of language disability with learning disability, it is surprising to find so few specific learning disability classes with language handicapped in them within the Regular school. (Wallach (1977); Klasen (1972))

The Hospital category covers: Bliss Symbol classes, 3 (60 per cent); autistic group, 2 (40 per cent). The two facilities are Crippled Children's Centre (Toronto) and Clarke Institute for Psychiatry (Toronto).

The Regional Centre is represented by classes/programs which are all autistic/behavioral, and residential in category, 6 (100 per cent).

The Developmental Centres include:

Special education and special language classes, each 3 (33 per cent);

Multiple handicap, 3 (33 per cent);

Cerebral palsied, 2 (22 per cent).

This illustrates the range of handicaps and programs within these facilities for mentally retarded.

The Residential Provincial Schools have two overlapping groups: hearing handicapped classes, 15 (68 per cent) and aphasic classes, 7 (31.8 per cent). This, in effect, discriminates between the Milton and the Belleville programs though obviously there is an overlap.

The Pre-school category also covers a variety of classes/programs. "Special Education" is seen as a general commitment, 26 (100 per cent), but the emphasis is on behavioral programs, 17 (65.4 per cent).

A small but significant proportion of programs in "total communication" and for autistics exists. There are 4 (15.4 per cent) of each. A minor purpose of the pre-school category, according to this analysis, is to serve as a "primary diagnostic" facility. Four (15.4 per cent) of primary diagnostic classes are recorded. There is a scattering of multiple handicap programs, 2 (7.7 per cent) and mental retardation and "speech and language" programs (3.8 per cent each).

This analysis confirms that the Pre-school group studied sees its function as special education with emphasis on behavioral difficulties, but to much lesser extent on specific language difficulties. The individual children with language difficulties studied within these programs are (as direct observation showed) very much in the minority.

The Trainable Retarded obviously contains "mental retardation" programs, 19 (76 per cent) but also contains a small but significant proportion, 3, or 12 per cent, of autistic classes/programs. They have an interest in total communication - 1 class or 4.6 per cent - and Bliss Symbol programs - 1 class or 4.6 per cent. The "total communication" is the McCordic School program.

The Other Residential facility comprises 6 (100 per cent) autistic programs but is also categorized as 2 (100 per cent) "mentally retarded" level programs, i.e. this facility at present serves the low-functioning autistic individual.

The Mainly Autistic facility covers 6 (100 per cent) autistic programs; of these, 3 (50 per cent) are day classes and 3 (50 per cent) are residential. The day classes are those attached to elementary schools or a day school (McHugh, Ottawa). The occurrence of residential classes indicates there is an overlap with the Regional Centres provision.

The category described as Other Language covers a variety of withdrawal programs on the one hand, and educational/clinical programs on the other. It contains a surprisingly high proportion of "mentally retarded" programs - 8, or 57 per cent - and "behavioral" programs - 4, or 28.6 per cent. There are "regular" classes - 3, or 21.4 per cent - in this category, but also specified "withdrawal", 1 class, or 7.1 per cent.

Specific learning disability programs - 2 (14.3 per cent) - are also represented in this "school" category. As discussed earlier, this is a complex grouping consisting of a particular clinical/educational, residential setting (the Child Study Centre, University of Ottawa) and classes or withdrawal/therapy programs administered by speech pathologists or language teachers.

The Mentally Retarded category is obviously for "mentally retarded", 17, or 94.4 per cent, but also comprises specific speech and language programs - 5, or 27.8 per cent - and withdrawal programs - 4, or 22.2 per cent. The Bliss Symbol program is represented by only one class or major program. From direct observation, it is likely that the Bliss Symbol technique is quite widespread among individuals in Regional Centres and Developmental Centres, but that there may not be specific programs or classes.

16.10 It should be noted that, whereas in recording and analyzing individual characteristics (Chapter 14) the teachers' responses were the units, the number of respondents (i.e. principal, teacher representing a school or program) is the basic unit of information in describing and analyzing programs (92 for principals, 227 for teachers).

17 The Background to Programs: Organization, Staff, and Resources

17.1 The Unit of Program (School)

17.1.1 Who is the authority responsible for the unit? (Schedule 2/1)

The majority of facilities are schools administered by the boards of education under the regulations of the Ministry of Education. (70 or 76.1 per cent).

The Ministry of Health administered 14, or 15.2 per cent of units.

Administration by other authorities: private associations; foundations (e.g. Integra Foundation); independent schools (also, presumably, funded by community or government grants) and university centres rated 1 unit each.

The Ministry of Health facilities are Hospital - 3 or 66.7 per cent; Regional Centre - 3 or 100 per cent; Developmental Centre - 2 or 50 per cent.

Pre-schools are also funded by the Ministry of Health - 6 or 66.7 per cent; and also one Other Residential (i.e. Kerry's Place, active treatment centre for adolescent autistics) - 100 per cent Ministry of Health; two teachers supplied by Board of Education.

17.1.2 The person in charge is:

Principal (of school)	71	77.2 per cent
Director	15	16.3 per cent
Program co-ordinator	3	3.3 per cent
Supervisor	3	3.3 per cent

These percentages correspond closely to the proportions for schools and for health-administered facilities above. The strong educational base of the programs studied here is indicated by these facts.

The title of Director is associated with Hospital facility - 1 (33.3 per cent); Pre-school - 8 (88.9 per cent); Other Residential - 1 (100 per cent), as well as one Autistic program (McHugh School) located in a system of hospital schools administered by a director. McHugh School also has its own principal.

Program Co-ordinators administer: Regional Centre - 1 (33.3 per cent) i.e. the intensive small group and one-to-one behavior modification and therapy programs in a residential setting in the Thistletown Regional Centre. Also in this category are the Developmental Centre, 2, or 40 per cent.

Supervisors are in charge of: a Regional Centre program - 1, or 33.3 per cent, parallel to the one described above. Residential Provincial (1, or 33.3 per cent) refers to the supervisor who, within the provincial school system, is directly in charge of the group of classes forming the aphasic unit in the Belleville school. One Pre-school also falls into this category.

17.1.3 What is the purpose of the facility?

To answer in general terms:

Education	75	81.5 per cent
Treatment/therapy	15	16.3 per cent
Diagnosis	2	2.2 per cent

This pattern parallels the proportion of schools, but the educational commitment of several facilities is also reflected here.

However, the Hospital facility, 3 (100 per cent) sees itself as providing treatment, although the observed programs are clearly educational. There is a similar identification with treatment by the Regional Centre, 2 (66.7 per cent) which is in a hospital setting and provides intensive educational treatment through operant approaches as well as a more conventional classroom and pre-school program. The Residential Provincial facility for hearing handicapped (presumably the aphasic unit) also sees its purpose as in part treatment - 1 (33.3 per cent). "Other Language" facilities contained 66.7 per cent identified as having treatment as a main goal.

Essentially, all facilities provide what was at one time in Britain called "special education treatment", with differing emphases and goals within this broad commitment.

17.1.4 What is the placement of the child?

This is:	Daily education, etc.	77	83.7 per cent
	Residential	6	6.5 per cent
	Half-time	4	4.3 per cent
	Sessions, e.g. therapy	1	1.1 per cent

The child with language handicap is therefore typically taught in a full-time day facility. Only a minority - but a significant one (at least 6.5 per cent) - receive residential placement.

In the Regular facilities only 3 (6.7 per cent) of placements were half-time, whereas 1 (11 per cent) of Pre-school units was half-time.

The majority of residential provision is in:

The Regional Centre (100 per cent)
Developmental Centre (20 per cent)
Other Residential (100 per cent) and a small proportion among the Trainable Retarded (9.1 per cent).

The complexity of the Other Language category is revealed by the distribution of 1 (33.3 per cent) day placement; 1 (33.3 per cent) sessional, and 1 other.

17.2 The Child in the Program

17.2.1 What is the total number of children in each major facility (or school)? (Schedule 2.1)

The total number of all schools/units associated with language programs is 75, and the number of their students ranges from 5 to 655. The distribution is unusual - rectangular, i.e. without any marked peaks. The mean is 229.78 students; the median value (i.e. 50th per-centile) is 188 and the interquartile range, i.e. from the top of the lowest 25 per cent (or 25th per-centile) to the top of the 75th per-centile is from 78 to 350 students. The difference between the median value (rank) and the arithmetical average reflects the large schools at the top end of the range.

The range of mean unit populations is considerable:

Regular	391.9	
Secondary	610	(one case only)
Other Language	204.67	
Residential Provincial	150	
Regional Centre	127	
Trainable Mentally Retarded	124.91	
Mental Retardation	105.67	
Hospital	83	
Autistic	70	
Developmental Centre	61.8	
Pre-school	36.78	

This, of course, reflects the relative size of secondary and elementary public schools and other institutions. The Regional Centre mean is as high as it is because it comprises other school programs apart from the small intensive ones (House 17 and 20) which deal with severely behaviorally-disturbed and autistic children. The Trainable Retarded facilities included in this study are clearly on the scale of small public schools. As expected, the "pre-school" units, i.e. the Developmental Centres and Pre-schools, are small.

17.2.2 The number of children in the unit responsible for the program (Schedule 2/1)

The class or unit in which the program is located is obviously much smaller. The total number of children (i.e. in special programs or classes) is 487.

The range in size of class is from 4 to 38, with no marked peaks, as before. The mean is 19.98. The median is 20 and interquartile range from 11 to 24 plus.

The range of means for different types of schools is:

Pre-school	22 children (1 unit)
Regular	19.24 (range from 4 to 36 students)
Hospital	14 (range from 5 to 23 students) i.e. two quite distinct programs
Autistic	14 (5, 15 and 22 students)
Regional Centre	13.33 (2 of 10 students; 1 of 20 students - different programs)
Other Residential	10

These class/unit sizes appear astonishing. On any known principles of program, many of these classes are too large for effective oral language teaching of children with significant to severe language handicap. The effective size of the unit will depend, of course, on whether the child is taken out for resource teaching (but this is listed in a minority of cases, from a previous analysis of classes) or there are other teachers, aides, or volunteers in the classroom.

Even the units for mentally retarded appear large: Developmental Centre, 29.5; Trainable Mentally Retarded, 24.57,(range from 11 to 38 in program).

17.2.3 What is the age-range of students in each unit/program?

17.2.3.1 The lower limit of age

The range of lower age is 2 to 14 years. The mean is 6.4 (the median is 4 and interquartile range 3 to 5 years). These statistics reflect the fact that the great proportion of lower ages is around 3 to 5 years, but with a scattering of much higher ages.

This distribution confirms the analysis of individual ages presented in broad categories for individual children, in Chapter 14, which showed a peak of children in the 6 to 9 year group, and a peak for first diagnoses and placements of children for special education at ages 5 to 6.

The range of mean lower ages for different facilities is fairly close:

Residential Provincial	5.5
Other Language	5
Regular	4.68
Autistic	4.67
Hospital	4.67
Regional Centre	4
Pre-school	2.5

The facilities for mentally retarded have a similar distribution: Developmental Centre 3.5; Trainable Mentally Retarded 4.6; Mental Retardation 6.25.

In the total distribution of units, 44.5 per cent had average lower age limits of below 4 years; and 21.7 per cent had lower age limits of below 3 years. These very young children (below 3) are concentrated in pre-school facilities.

17.2.3.2 The upper limit of age range in units (programs) (Schedule 2/1)

This is from 5 to 21 years. The mean is 14.13 years; median value is 13 and interquartile range 11.5 to 15.5 years. This shows that there is a high concentration of upper age limits around and above the 13 year level (top of elementary school).

The range of means for facilities in years is:

Other Residential	21
Autistic	16.33
Hospital	16.33
Residential Provincial	15.50
Regular	13.39
Other Language	12.5
Regional Centre	11.67

The Pre-school (mean 7.50 year upper age) is obviously the exception.

The mental retardation facilities have a higher upper age limit, reflecting the fact that they retain students until 21 years of age; Developmental Centre upper age limit is 17 which is unexpected, if these centres are strictly for younger children; Trainable Mentally Retarded upper age limit is 17.8 and Mental Retardation is 20.25.

The upper age range for the Regular school is the upper age limit of the elementary school. This, and the fact that few (only 1 recorded) secondary schools are reported as having language programs means that the child leaving elementary school with language disorder or delay seems to have no place to go but a specialized facility.

17.2.3.3 The age range in units (programs) (Schedule 2/1)

The age range (averaged) is obviously the difference of the values given in the above two paragraphs:

Pre-school - 2.5 to 7.5 years (a 5-year pre-primary range)

Regional Centre - 4 to 11.67 years (Primary range)

Hospital - 4.67 to 16.33 (full school range)

Autistic - 4.67 to 16.33 (full school range)

Regular - 4.68 to 13.39 (elementary school range)

Other Language - 5 to 12.5

Residential Provincial - 5.5 to 15.5 (full school range)

Other Residential - 14 to 21 (i.e. adolescent/adult age range)

The mental retardation facilities reflect the wide age range known to be accepted by these facilities:

Developmental Centre - 3.5 to 17 years

Trainable Mentally Retarded - 4.6 to 17.8 years

Mental Retardation - 6.25 to 20.25 years.

17.2.4 The Teacher/Student Ratio (Schedule 2/1)

More important than size of class is the effective teaching load or accessibility of the teacher, reflected by the teacher/student ratio. This ranges from 1/1 to 1/33. The mean is 9.96; the median is 10, and interquartile range from 5 plus to 25.

The range of means of ratios for units is:

Regular	9.95
Residential Provincial	5
Other Residential	4
Other Language	4
Preschool	3.89
Autistic	3.33
Hospital	3
Regional Centre	2.33

The mental retardation facility ratios are not favourable, compared with the above: Trainable Mentally Retarded - 10; Developmental Centre - 6.4; Mental Retardation - 8.75.

These statistics throw some light on the issues previously raised concerning the size of the unit in which the program is found. Clearly, the teacher/student ratios described here give a much more optimistic picture. Even so, the range of teacher/student ratios is large and admits of a significant number of quite large teaching groups. The average teacher/student ratio for the Regular language program is the highest by far (see table).

The ratio for the Residential Provincial school underline that this is a program with special resources and staff to meet the needs of hearing handicapped children, and that the aphasic classes, in particular, have a small membership. Other Residential is a highly individualized treatment/basic education/communication and work program. Other Language connotes language therapy or small teaching groups in a university clinical/educational centre. Pre-school must have a high proportion of small groups - often with a large number of child-care workers attached to a group or individual children. The autistic classes require a high attention and reinforcement rate. The highest number of normal pre-school children which can be regarded as an individualized or high-stimulation group is about 3, and this is also the number cited as the highest practicable in sharing attention between autistic children in teaching (the Hung program) or in training children to accept group membership (Santa Barbara Autism Dissemination Project).

The Hospital category is in part formed of an autistic (small group) and in part a Bliss Program which also needs a high level of attention for severely handicapped children. The Regional Centre is a set of programs, including highly individualized behavior management programs in one-to-one or very small group situations.

One question which arises here is what is the composition and nature of the Regular school programs for language handicapped, considering some of the high teacher/student ratios recorded above.

17.2.5 How are children grouped by school? (2/1)

The principal's perceptions of the basis of grouping for children is:

Age	22	(23.9 per cent)
Functional level	20	(21.7 per cent)
Mental age	8	(8.7 per cent)
Social/developmental age	6	(6.5 per cent)
Behavior	5	(5.4 per cent)
Teacher's talent/special program	4	(4.3 per cent)
Language level	2	(2.2 per cent)
Whether parents can co-operate in operating program	2	(2.2 per cent)

In other words, the major bases of administrative grouping are age and functional level. If functional level and mental age are taken as similar, then these combined are 30.4 per cent and are the most important criterion. Behavior and social level are minor considerations. What is striking is the low importance given to actual language level or to the appropriate matching of the child's need with a teacher's skill or a special program.

It is to be emphasized that this is the principal's perspective on the issue, as the person who largely decides on the organization of the school or facility. The perceptions of the individual teacher, on what is necessary for effective organization and grouping, are somewhat different, as reported in the following chapter.

There appears to be no significant variation between different kinds of facility, partly because of the low response level.

17.3 Administration and Staffing

17.3.1 The principal's qualifications

Qualifications were listed as:

M.A. - 33 (35.9 per cent)

B.A. - 24 (26.1 per cent)

Other - 11 (12 per cent)

Teachers' qualifications only - 4 (4.3 per cent)

Ph.D. - 4 (4.3 per cent of equivalent)

Principal's Certificate only - 4 (4.3 per cent or equivalent)

The majority of principals have qualifications of B.A. or higher (60 per cent) and over a third have the Master's degree. There is a near-significant difference in this regard between the kinds of facility.

Of the Ph.D. principals, one directs a program in the Hospital facilities (Clarke Institute); one directs a Regional Centre; one directs a Pre-school clinic and one directs an Other Language program (Centre for Child Study, University of Ottawa).

Master's degrees are found in Regular programs (40 per cent); Hospital (33.3 per cent); Regional Centre (33.3 per cent); Other Language (33.3 per cent); Autistic (33.3 per cent); Trainable Mentally Retarded (45.5 per cent); Residential Provincial (66.7).

B.A. degrees are found in Hospital facilities (33.3 per cent) and Autistic (66.7 per cent).

17.3.2 Principal's experience with regular schools

There were 47.8 per cent responses. Experience ranged from 1 to 35 years, with a mean of 10.93 years. The median was 10 years and interquartile range was 5 to 13 years.

Experience was distributed in years as follows (of those replying): Pre-school 13; Regular 12.83; Regional Centre 10; Autistic 3.50; and Residential Provincial 2.0.

(The Trainable Retarded facilities had a mean of 6.4; Developmental Centres 5; and Mental Retardation 11.5.)

A note on the apparently low mean for Residential Provincial. Experience suggests that qualified teachers of the deaf, such as form the staff of the Residential Provincial schools, tend, because of their early specialized training, to have a more restricted experience of regular classroom teaching than the average regular school teacher/principal.

17.3.3 Principal's experience with exceptional children

This ranged from 2 to 25 years, with a mean of 8.61. The median was 7, and interquartile range 4 to 11 years, i.e. there is a number of very high scores. The range in years is:

Pre-school 14; Autistic 12.50; Residential Provincial 10.30; Hospital 10; Regular 6.50; Regional Centre 2.5.* For comparison of the mentally retarded group, the Developmental Centre had a mean of 18; Trainable Mentally Retarded 5.57; and Mental Retardation 9 years.

There is an interesting difference between this distribution and that for experience with regular schools. Regular school principals

*The last comparison appears to refer to the experience of the two persons in charge of House 17 and House 20 at Thistletown.

have significantly less experience with exceptional children than with regular teaching. By contrast, the Residential Provincial (which is a specialized provision) has one of the highest means. Principals or directors of programs where autistic children are based had a very high mean years of experience with exceptional children.

17.3.4 Full-Time Staff

17.3.4.1 Full-time teaching staff in the school or facility ranged from 1 to 38, with a mean of 12.78. The median was 12 and the interquartile range from 7 to 18 staff. Means were:

Residential Provincial - 17.50

Regular - 14.86

Regional Centre - 22 (but this represents two entries, one of 7 and the other of 36 staff)

Hospital - 9.50

Autistic - 9.50

Other Language - 5 (range from 2 to 8 years)

Other Residential - 2 full-time teachers

The Mental Retardation facilities are as follows:

Developmental Centre - 6.80

Trainable Mentally Retarded - 13.91

Mental Retardation - 10.25

This distribution underlines the variation in size of school unit.

17.3.4.2 Full-Time Child-care Staff ranged from 1 to 9. The mean was 5.7; the median was 5.5; and the interquartile range was 2 to 8 years. Child-care staff are located in particular kinds of unit or replace teachers, usually in facilities funded by the Ministry of Health.

No child-care staff were recorded for the Regular program; 2 were recorded in Hospital program; two units of 9 in the Regional Centre; 2 in the Residential Provincial facility, and units of 2, 6 and 7 child-care workers in Pre-school. One unit of 6 was recorded in the Other Language group and one unit of 8 in an Autistic facility. Child-care staff tend to be associated with programs where there is a strong need for a one-to-one or very small group approach.

17.3.4.3 Full-time speech pathologists were extremely limited in number. The range is from 1 to 3 (mean 1.6). They are found: 1 in Regular school (the Bedford Park program); 2 in Residential Provincial; 1 in Pre-school; and 2 in Other Language programs (Carleton). One Developmental Centre had a full time speech pathologist. House 20, Thistletown, had a full-time speech pathologist.
In other words, a full-time speech pathologist in the school or program is a highly unusual form of staffing. Teachers have little experience of working with this kind of professional as a full time colleague.

17.3.4.4 Full-time social workers are also scarce. The range is from 1 to 5, with a mean of 1.7. They are distributed as follows:

Regular 1; Regional Centre 1; Residential Provincial 1; Other Language 1; Pre-school 2 in one unit and 5 in another.

17.3.4.5 Full-time occupational therapists are found only in one instance, in a Developmental Centre.

17.3.4.6 Full-time physiotherapists are found only in the Other Language programs (1) and Developmental Centre (2 in one centre).

17.3.4.7 Full-time psychologists range from 1 to 4 (mean 1.75), found in Residential Provincial school (1), Pre-school (1) and Other Language program (3).

17.3.4.8 Full-time psychiatrists range from 3 to 6. The majority were found in one Pre-school which is in fact a clinic; it has since become a small accredited hospital.

17.3.4.9 Full-time librarians are found mainly in Regular programs, 10 (22.2 per cent) and in Residential Provincial, 2 (66.7 per cent) and nowhere else.

17.3.4.10 Full-time nurses There are 3 cases: Regional Centre, 1, Residential Provincial, 1, Trainable Retarded facility, 1.

17.3.4.11 Full-time administrators range from 1 to 5, with a mean of 1.54. The majority were found in 26 Regular programs, mean 2.92. Others were in Residential Provincial, 2.0; Other Language, 2.0; Pre-school, 1.86; and Autistic, 1.33.

17.3.4.12 Full-time teachers' aides ranged from 1 to 9 in any given unit; there were only 27 units with teachers' aides, i.e. 29 per cent. The mean number of teachers' aides in those programs was 3.4. They are found mainly in Regular schools (9 cases, ranging in size of group from 1 to 4 aides, mean 2.44) and Developmental Centres (3 cases ranging in size of group from 1 to 7, mean 4.0). Only 20 per cent of Elementary schools had teachers' aides.

17.3.4.13 Full-time doctors None was recorded.

17.3.4.14 Total full-time staff ranged from 1 to 45, with a mean of 15.86; the median was 14 plus and range from 9 to 21. The range of means for facilities was: Regional Centre 26 (12, 19 and 40 staff); Residential Provincial 22 (8 to 36); Regular 16.98; Other Language 15.60; Hospital 12.33 (4, 7 and 26 staff); Autistic 11, Other Residential 10, Pre-school 8.80 (4 to 23 staff). Among the mental retardation facilities: Trainable Mentally Retarded has 14.73, Developmental Centre 11.20; Mental Retardation 12.75.

In summary, there is considerable variation in size of teaching and specialist staff, which is obviously related to size of unit, but there is also considerable variation within categories, with the more specialized and intensive-treatment units such as Hospital, Regional Centre, Pre-school and Residential Provincial having more full time specialized staff and a greater range of such staff.

17.3.5 Part-time Staff

17.3.5.1 Part-time teaching staff range from 1 to 30, but mainly in the range 1 to 6. The mean of recorded cases is 2.79. On the whole, part-time teaching staff are not much used:

Other Language program (1 case) used 4 such teachers; Regular program had 19 cases with a mean of 3.53 teachers; Hospital had 1 case, of 3 teachers; Residential Provincial had 2 cases with a mean of 3 teachers. Among the Pre-school programs, by contrast, 4 out of 9 had part-time teaching staff.

17.3.5.2 Part-time child-care workers The use of part-time child-care workers contrasts significantly with the use of full-time child-care workers. There are only 3 cases recorded, one facility using 1 and one using 2 workers.

17.3.5.3 Part-time speech pathologists There were 74 of these (62 establishments of 1, two of 2, and two of 4) with a mean of 1.13.

Speech pathologists were mainly located in Regular programs, 34 cases (75.6 per cent) and Pre-school, 7 (72.8 per cent).

The Regional Centre had 3 (100 per cent); Hospital had 1 establishment of 1 (33.3 per cent) and 1 establishment of 2 (33.3 per cent).

The Autistic program had 2 (66.7 per cent) and Other Residential had 1 (100 per cent).

Trainable mentally retarded programs had a high level of such staffing: 8 establishments of 1, one establishment of 2, and one establishment of 4. Developmental Centre and Mental Retardation each had 2.

As might be expected of language programs, the part-time speech pathologist was much the most frequent of professional staff.

17.3.5.4 Part-time social workers By contrast to speech pathologists, part-time social workers were nearly as scarce as full-time. There were 15 cases, 11 of one worker and three of 2 workers; these were mainly in Regular programs (6 establishments of 1, one establishment of 2). There was 1 in a Regional Centre, two units of 1 in Developmental Centres, 1 in a Pre-school and 1 in an Autistic facility.

17.3.5.5 Part-time physiotherapists There were 8 of these (7 establishments of 1, one of 2 staff). These were: 2 units of one staff in the Pre-school programs (22.2 per cent) and 1 unit in an Autistic facility. (The rest were in mental retardation facilities: 2 in Developmental Centres, 1 in Trainable Retarded facility.)

17.3.5.6 Part-time psychologists numbered 30. There were 25 establishments of 1, and 5 establishments of 2. The mean was 1.17 among the facilities recorded.

Regular programs had 11 (24.4 per cent)
Pre-school - 5 (of 1) - (55.6 per cent), 1 (of 2) - (11 per cent)
The Regional Centre had 2 establishments of 1 (66.7 per cent) and one establishment of 2 (33.3 per cent).
The Autistic programs had 2 establishments of 1 (66.7 per cent).
The mental retardation facilities are quite well staffed: Trainable Retarded having 3 establishments of 1, and 1 establishment of 2.

The Developmental Centres had 1 establishment of 1, and 1 establishment of 2.

There were fewer part-time psychologists (just under half as many) than there were part-time speech pathologists.

17.3.5.7 Part-time psychiatrists numbered 11, a mean of just over 1 in each of the facilities which employed them. They were found in:

Regular programs - 3 (6.7 per cent)
Hospital - 1 (33.3 per cent)
Regional Centre - 1 (33.3 per cent)
Pre-school - 4 establishments of 1 (4 per cent) and 1 establishment of 2 (11 per cent).

Once again, the psychiatrist is usually found in programs funded by Health or in hospital settings.

17.3.5.8 Part-time librarians There were 17 (18.5 per cent of total programs) nearly all in the Regular programs (33.3 per cent of these) and one in an Autistic program.

17.3.5.9 Part-time nurses There were 49 of these (53.3 per cent of facilities) i.e. the typical staffing is a part-time nurse, usually a public health nurse who serves two or more schools. The majority were in Regular programs - 33 (73.7 per cent); Regional Centre 1 (33.3 per cent); Pre-school 5 (55.6 per cent).

Mental retardation had a fairly high proportion of nursing staff, as might be expected; Developmental Centre 1 (20 per cent); Trainable Retarded 4 (3.14 per cent); Mental Retardation 2 (50 per cent).

17.3.5.10 Part-time administrators numbered 8 (8.7 per cent) and 5 were in elementary schools.

17.3.5.11 Part-time teacher aides ranged from 1 to 6. In 88 per cent of cases, there were no such aides. The mean in recorded units was 2.4 aides. The majority (6) were in Regular programs.

Others were in Trainable Retarded facilities, 1 establishment each of 1, 2, 3, and 4 staff. Mental Retardation had 1 establishment of 2 staff.

17.3.5.12 Part-time remedial teachers There were 20 (21.8 per cent) with a mean of 1.15 in the units recorded. The majority were in Regular programs (17 cases) and none recorded for other educational programs. Developmental Centres had 1 establishment of 2; 1 establishment of 1.

17.3.5.13 Total part-time staff ranged from 1 to 14 with a mean of 4.83. The median was 5 with a range from 3 to 5. The means of programs were: Pre-school 5.22; Hospital 5.10; Regional Centre 4.67; Regular 4.07; Autistic 2.67; Other Residential 1.00.

Part-time staff was relatively numerous in mental retardation facilities: Developmental Centres 5.80; Trainable Retarded 4.30.

17.3.5.14 The Use of Volunteers

Volunteers, as an alternative to teaching aides, can make a substantial contribution, if trained and organized, to the adult/child ratio and teaching effectiveness of the classroom. (See Hedges) There were 326 of these. The range was from 1 to 9 volunteers in a school, with a mean of 5.47. (The median is 5 with an interquartile range from 3 to 8.) The greatest use of volunteers was by Hospital, 5.60; Regular 5.88, and the least was in Residential Provincial, 2.00. No volunteers were reported by the Regional Centre, Other Language, or Other Residential programs.

By contrast, there was a high level of use of volunteers in mental retardation programs - Trainable Retarded 4.80; Developmental Centre 4.20.

The percentagesof facilities using volunteers were: Regular 26.6 per cent; Hospital, Residential Provincial, Pre-school, and Autistic, all 33.3 per cent.

17.3.5.15 Students in training

The number of students training within and/or participating in a program ranges from 1 to 9 with a mean of 6.15. The median is 6 with interquartile range from 3.5 to 9. Students were found in 50 per cent of programs. The highest proportion were in:

Regional Centre 8.50 (33.3 per cent)

Pre-school 7.17 (66.6 per cent)

Autistic 6.16 (33.3 per cent)

Regular 5.63 (42.2 per cent)

Residential Provincial 5.00 (66 per cent)

There were more students in training in residential facilities.

Mental retardation facilities had a high proportion of students:

Developmental Centre 6.0; Trainable Retarded 6.75; Mental Retardation 5.0.

17.3.5.16 Parents

The number of parents working with any given program was 1 to 9, with a mean of 5.72. The median was 5 plus with an interquartile range from 2 to 8 plus. Some 42 per cent of programs had parents visiting or working with them. The highest proportions were 7 cases of 1 parent in a class, and 17 cases of 9 parents in one class.

Means range from:

Pre-school 7.70 (33.3 per cent)
Regular 5.48 (51.1 per cent)
Residential Provincial 4.50 (66.6 per cent)

None was recorded for Other Language, Other Residential, or Autistic.

The mental retardation programs had high proportions of parents working with them: Developmental Centre 9.0; Trainable Retarded 5.80; Mental Retardation 7.0.

These facts suggest that there is a significant interaction between parents and programs, a very important issue for language-handicapped children where progress in language depends on the child generalizing the language skills he has learned and applying them in real life settings, so that school-parent co-operation is crucial.

17.3.5.17 Additional professional support

The amount of additional professional support is summarized in the following table, based on specific question:

Medical support - 43 (46.7 per cent)
Consultants - 26 (28.3 per cent)
Psychologists - 10 (10.9 per cent)
Social worker - 8 (8.7 per cent)

As suggested by previous analyses, the highest level of medical support is in Hospital - 3 (100 per cent); Regional Centre 3 (100 per cent); and Pre-school - 8 (88.9 per cent); Autistic 100 per cent and Residential Provincial 66.7 per cent. The Regular program had, by contrast, 35.6 per cent of units with medical support.

The highest level of psychological support was in the Regular programs (6 of the 10 cases); Residential Provincial 1; Other Residential 1; and Other Language 1.

Consultants were found most frequently in the Regular programs, 14, (31.1per cent). The Trainable Retarded had a high level of support: 7 - 63.6 per cent of units. Social worker support was located mainly in the Regular programs (6 out of 8).

17.4 The Teachers

The qualifications and experience of teachers are extremely important variables in the organization of a program.

17.4.1 Teacher Qualifications

Of the total group, 53.8 per cent had only a teacher's qualifications. There were 38.6 per cent with a B.A. or equivalent. There were many fewer with more advanced educational qualifications such as B.Ed. (5.2 per cent) and M.Ed. (4.8 per cent). This contrasts with the relatively high proportion of master's qualifications among principals.

Of the total group, 8.6 per cent had a Child Care Certificate as basic qualification. They were found mainly in the special Pre-school programs, where staffing is based on child-care workers, but were also found in Hospital (probably the autistic program) and Regional Centre (autistic) programs as well as elementary school programs.

"Other qualifications" amounted to 34.3 per cent.

These qualifications overlap, so that a person with one level of qualification may also have another. This is not true, however, of the "teacher qualification only" group.

The Regular (elementary school) programs had a slightly higher proportion of teachers with only teacher qualification (59.5 per cent) but also had a higher proportion of B.A. degrees (41.8 per cent) and advanced degrees (B.Ed. or M.Ed., both at 5.3 per cent).

Regional Centre staff have the highest proportion with B.Ed./M.Ed. degrees (16.7 per cent) but also have the highest proportion of child-care staff; this arrangement reflects the small group/individual-behavior-management or therapy practised in residential settings with severely handicapped autistic or behaviorally-disturbed children.

Residential Provincial school staff have the highest proportion with teacher qualification only (but this would include specialized training as teacher of the deaf). By contrast, teachers of Autistic groups have the highest proportion of B.A. degrees and low proportions with only basic teaching qualifications.

Those with above-average proportions of B.A. are:

Autistic (83.3 per cent); Other Language (58.3 per cent); Other Residential (50 per cent); Regular (41.8 per cent) and Hospital (40 per cent).

Those with above-average numbers of B.Ed. degree are:

Regional Centre (16.7 per cent); Pre-school (7.7 per cent); Other Language (6.7 per cent) and Regular (6.3 per cent).

Those with above-average proportions of M.Ed. are:

Regional Centre (16.7 per cent); Other Language (6.7 per cent); and Regular (6.3 per cent).

(Among the mental retardation programs, Development Centres show up well with 10 per cent of B.Ed. and Trainable Retarded Schools with 12.5 per cent of M.Ed.)

17.4.2 Teacher qualification and training courses

Professional courses were classified as:

Ministry of Education summer courses, Intermediate and Specialist levels; local professional development; specific courses (such as the 6 week North Western University summer course taken by several staff from the Bedford Park program) and courses longer than these specific courses.

Of the total group:

69 (45.7 per cent) had "longer courses"; 59 (39.1 per cent) had specific courses of training; 45 (29.8 per cent) had Specialist level Ministry of Education courses. Only 10 per cent had as little as an Intermediate Ministry of Education course.

Among the staff with highest levels of training were:

Regional Centre (Special courses, 100 per cent; "longer courses", 100 per cent; local professional development, 83.3 per cent);

Hospital (Special courses, 75 per cent; "longer courses", 50 per cent; local professional development, 100 per cent).

Teachers of Autistic programs had good records of training:

Specialist Ministry of Education courses, 66.7 per cent; specific training courses, 66.7 per cent and local professional development 83.3 per cent, but with fewer long courses.

Residential Provincial school teachers and Other Language had a higher proportion of long courses, 64.7 per cent (i.e. training as teachers of deaf) and 57.1 per cent, respectively.

The teachers in Regular (Elementary school) programs are the least qualified on these criteria. This group has a high proportion of Ministry of Education Specialist courses (43.6 per cent) but fewer specific training course (27.3 per cent) and longer courses (34.5 per cent).

The Pre-school group is lowest on Specialist courses (Ministry of Education) but higher on longer courses, 72.8 per cent, and local professional development. Longer courses here may have been taken to mean the two-year course of child-care training with specialist qualifications in developmental-disability, etc.

17.4.3 Teachers' years of experience with regular classrooms

Years of experience with regular education range from 1 to 27. The mean is 5.73 years; the median is 5 years with an interquartile range from 3 to 9 years. There is significant variation between types of program in mean length of experience with regular education.

Regular programs have a mean of 8.4 years; Provincial Residential 8.7 years; Other Language 6.2; Hospital 3.5; Autistic 2.3.

Developmental Centre staff have a mean of 5.5 years; Trainable Retarded 2.8 years; Mental Retardation 5 years.

So, whereas there is a higher level of qualifications (academic) and training among staff of specialized programs, there is likely to be shorter contact with regular school students.

17.4.4 Teachers' years of experience with exceptional children

It is of equal importance to know how much previous experience teachers have had of exceptional children.

The mean length of experience is 5.43 years; the median is 5 years with a range from 2 plus years to 8 years. The staff of programs with longest experience of exceptional children are:

Residential Provincial, 7.2 years; Regular, 6.67; Other Language, 6.2; Pre-school, 5.9.

Groups with the least experience are: Autistic programs, 3.6 years; Regional Centre, 2.8 years; and Hospital. By contrast, mental retardation staff have a middle-range length of experience: Mental Retardation, 5 years; Developmental Centre, 5.5; Trainable Retarded, however, have restricted experience with an average of 2.8 years.

Once again, though more highly qualified and trained, the staff of specialized facilities tend to have less actual length of experience with classroom programs for exceptional children.

17.4.5 The teachers' background in specific kinds of exceptionality

The teacher's background of experience and/or training determines the teacher's perceptions of the child's handicap and the choice of teaching techniques, materials, and program emphases.

The highest proportion of teachers were those who had worked previously with slow learners - 64 (50 per cent). The next highest proportion was experience with emotionally disturbed - 44 (34.4 per cent); followed by 27 (21.1 per cent) with experience of children with specific learning disability.

Approximately equal proportions had experience as language/speech teachers (19.5 per cent) and with the hearing handicapped (18.8 per cent). Only 5.5 per cent had had experience with cerebral palsied or visually handicapped children.

There can be overlap, i.e. one teacher may report two or more kinds of experience, but the classifications tend to be independent.

Clearly, the majority of teachers with experience of special education have worked with slow learners, or educable retarded. From a statistical point of view, it is most likely that any representative sampling of all teachers in special education would produce a majority who have worked with the slow learner, since this is the most frequent category of general educational handicap.

The fact that such a high proportion of teachers of children with language disorder are drawn from backgrounds involving slow learners or behavioral disorder is of concern; this may well affect the way they interpret the problems of their students or select programs for them. An unexpectedly low proportion of teachers have experience in speech and language.

Within the various programs, the following patterns emerge:

17.4.6 Experience with slow learners is found in a high proportion of Regular (elementary) school programs (76.7 per cent). The lowest proportions are in Residential Provincial (who need special training as teachers of the deaf), in Regional Centres, and Other Language.

Not unexpectedly, a high proportion of staff in Trainable Retarded (82.4 per cent) and Mental Retardation (76.9 per cent) programs have their background in teaching slow learners.

17.4.7 Experience with behavioral/emotional disturbance

The highest proportions are found in staff of Regional Centre (100 per cent) and Autistic (100 per cent). This seems appropriate, considering the severe behavioral problems of the autistic child found in these programs. A very high proportion of Pre-school staff (93.8 per cent) have this background, which is appropriate to the high proportion of behavioral disturbance in these specialist pre-school units, as revealed by direct observation and the outcomes of previous statistical analysis. Lowest proportions (below the group average) in behavioral disturbance are in Residential Provincial, Other Language, and Regular program staffs.

17.4.8 Experience with specific learning disabilities

Staff of Autistic programs had the highest proportion of experience with specific learning disabilities (100 per cent) but Pre-school staff (56.3 per cent) also have a high proportion with this experience. Regional Centre staff (33.3 per cent) is also above average for the whole group. All other programs have low proportion of staff with this relevant experience, including the Regular programs with 18.6 per cent.

17.4.9 Background in language/speech

The highest proportion of staff with background in language/speech is in Hospital programs, 40 per cent; Autistic 33.3 per cent; and Regular 27.9 per cent. All the others are below the group average.

17.4.10 Experience with hearing-handicapped

Obviously teachers in the Residential Provincial schools for hearing-handicapped had a high probability of this experience (100 per cent of programs). Other Language recorded 20 per cent. The Regular program was above average with 25.6 per cent of teachers who had experience of teaching the hearing-handicapped.

17.4.11 Experience with cerebral palsy/visual handicap

As expected, the Hospital program (which is known to contain a cerebral palsied/Bliss Symbol group) - 60 per cent of this category - has also the highest proportion of staff recorded as having experience with this method (60 per cent). Nevertheless, the Developmental Centres, which have a high proportion of children with severe physical as well as mental developmental difficulties, report 16.7 per cent of staff with this experience.

17.4.12 "Other" background

The distribution of "other" background with high incidence among the staff of Other Language programs suggests that this means a background in speech pathology or in a clinical discipline such as psychology, as distinct from teaching of handicap groups.

The distribution of experience of teachers now dealing with language-handicapped children emphasizes experience with slow-learners but seems unduly low in specific learning disabilities and speech/language, which are likely to be the most closely related to language disability. The experience of teachers may, however, match with the generally low ability/attainment levels found in language-handicapped children in the present study. (See Chapter 14)

It may also be reflected in the organization of programs and materials discussed in the next chapter.

17.4.13 The kinds of specialist teacher in language programs (2/1)

The principal was asked what were the specialist staff available. They are as follows:

Language/speech	44	(47.8 per cent)
Motor movement/gym	14	(15.2 per cent)
Behavior modification experts	9	(9.8 per cent)
Other	7	(7.6 per cent)

It should be noted that these percentages are of the schools responding, not of the number of teachers, i.e. there could be one or more "language specialist" in the schools recording this response.

Obviously, the major commitment is to language/speech specialization with little emphasis on motor skills and movement development in specialist staffing. Behavior modification is not seen as a specific "discipline" but as a technique which may be understood and used to some extent by all staff. There is no significant variation between groups.

"Behavior modification" specialists are most likely to be found in Regional Centre - 1 (33.3 per cent); Other Residential - 1 (100 per cent); and Autistic - 2 (66.7 per cent) programs.

The Regular and Pre-school programs are those with the greatest variety of specialist skills.

17.4.14 The number of specialist teachers (2/1)

These range from 1 to 9, with a mean of 3.91 in the facilities which record their existence. The median is 3, with an interquartile range from 1 to 5 cases. The range of means for such staff is:

Regional Centre	9.00
Residential Provincial	8.00
Autistic	6.67
Hospital	5.67
Other Language	5.50
Pre-school	3.87
Other Residential	3.00
Regular	2.76

The mental retardation programs range as follows:

Developmental Centre - 5.33; Trainable Retarded - 4.43; Mental Retardation - 2.0.

As in qualifications/training of staff and specialization programs, the special units or those dealing with severe handicap have a higher proportion of specialist staff.

17.5 Teachers' Views of Developments and Improvements

17.5.1 The Principal's views on improvements (2/1)

Seventy-five per cent of principals recorded their views. Factors leading to improvement were:

Better space/facilities	19	(20.7 per cent)
New/alternative programs	18	(19.6 per cent)
Adaptation of material to children's needs	8	(8.7 per cent)
Improvement in professional support	6	(6.5 per cent)
Changes in organization/timetable	3	(3.3 per cent)
More effective teaching techniques	2	(2.2 per cent)
Better links with administration	2	(2.2 per cent)
Improved facilities for dealing with parents	2	(2.2 per cent)
Changes in initial teacher training	1	(1.1 per cent)
Specific new courses	1	(1.1 per cent)

As perceived by the principal, the major changes needed are in improved facilities and organization. Need for new, alternative, or properly adapted programs is stressed by 29.4 per cent. Need for improved professional or administrative support is a low priority. Change in initial teaching training has a low priority which implies satisfaction with the state of present training. There is not a stated need for improved additional training or new courses. This is unexpected.

17.5.2 The teachers' views on teacher-training (Schedule 4/1)

Twice as many teachers (101 - 58.7 per cent) considered that more training in specific problems of language was needed as expressed the view that training courses were appropriate and effective (29.1 per cent). A significant proportion expressed the view that there was not sufficient practical training and application (68 - 39.5 per cent). A very small proportion of teachers felt that there was need for improved consultation. This finding can be related to the fact (see Chapter 18) that programs are selected and developed mainly by individual teachers and groups of teachers within the school, not by consultants or professionals outside the program. Only a very small proportion of teachers (2.3 per cent) stated there was a gap between the level and content of Ministry of Education courses and that of graduate courses.

Comparison of the responses of principals and teachers reveals quite different perspectives on needs, particularly on the need for practical and effective training in language work.

The highest proportion of teachers expressing the view that help and training was needed with specific problems was in:

Hospital (100 per cent); Regional Centre (100 per cent); Other Language (100 per cent); and Autistic (83.3 per cent) -- i.e. those facilities with highest initial qualifications of staff and presenting the most intensive programs to severely handicapped children.

The lowest proportions were in Residential Provincial (44.9 per cent); Other Residential (30 per cent); also Mental Retardation programs. Staff of Residential Provincial schools are those with the highest level of specific professional training. The Regular programs fell slightly below average in expressing this view.

Among those expressing the view that there was not enough practical training were Pre-school (60 per cent) and Regional Centre (50 per cent), and also Mental Retardation facilities. Staff of the Regular program fell just below average in this response. Programs which were below average in this view (i.e. presumably were satisfied with the practicality of training) were Hospital (0); Residential Provincial (11 per cent); Autistic (16.7 per cent); and Other Language (28.6 per cent).

Among those expressing the view that teacher preparation is appropriate, the highest proportions were in Residential Provincial (55.6 per cent), Other Residential and Regular programs. Below average (i.e. not satisfied) were Hospital (0); Pre-school (15 per cent); Other Language (0); and Autistic (16.7 per cent).

The need for improved consultant help was expressed by the Regional Centre (25 per cent), and mental retardation facilities, but the Regular program also had an above-average response on this item.

17.5.3 Improvements in program and organization suggested by teachers are:

In provision of materials/organization - 88 (44.9 per cent)
Personnel - 75 (38.3 per cent)
Curriculum development - 68 (34.7 per cent)
Improved facilities/space - 67 (34.2 per cent)
More generous teacher/student ratio - 48 (24.5 per cent)
Better professional development - 51 (26 per cent)
Changes in initial teacher training - 40 (20.4 per cent)
Improved techniques for contact with parents - 13 (6.6 per cent)

The need for improved materials and curriculum ranks considerably higher among teachers than among principals. Curriculum development refers to the more effective development and integration of content and sequence, and of effective grouping for instruction. Improvements in personnel refer to the need for better professional support (e.g. speech pathologist, psychologist, social worker, etc.)

The emphasis is on improvements in curriculum, materials and practical techniques of teaching. It is interesting that a higher priority is attached by teachers to improved professional support than is attached by principals. Both agree on the importance of improved facilities and space, though this is not such a high priority among teachers; the reader may wish to cross-refer to the response in the next chapter analyzing judgements on the effectiveness of teaching spaces currently available.

It is of interest, especially in comparison with earlier findings on the wide range of teacher/student ratios in language programs, to find that emphasis on the need for improved teacher/student ratio is not one of the highest priorities.

The teachers perceive the need for improved professional development as much more important than do principals. A significant minority (about one in five) see need for change in initial teacher preparation, in which there is a sharp disagreement with principals' views.

It is of interest that there is such a low priority for improved techniques and arrangements for contact with parents. This argues for satisfaction with present arrangements or suggests that this aspect is seen as relatively unimportant. This is significant in view of the need for effective liaison with parents in order to ensure effective generalization and transfer of language learning from school to real-life situations.

The highest proportions seeing a need for improved materials are: Regional Centre (100 per cent); Pre-school (66.7 per cent); Hospital (60 per cent); and Residential Provincial (47.14 per cent). The lowest proportion is among Other Residential and Autistic, 16.7 per cent). The remainder lie between these extremes, with a response rate of 30 to 40 per cent.

The highest proportion seeing a need for more and improved professional personnel are: Autistic (83.2 per cent); Residential Provincial (57.9 per cent); and Other Language (53.8 per cent); the lowest are Regional Centre (0); Other Residential (0); and Pre-School (33.3 per cent).

The highest proportion seeing a need for development in curriculum are in the Autistic (83.3 per cent) and Regional Centre (66.7 per cent) programs; lowest are Residential Provincial (15.8 per cent); Other Language (23.1 per cent); Other Residential (0).

The highest proportion seeing the need for better facilities and space are in Pre-school (42.9 per cent) and the Mental Retardation group. The lowest are Other Residential (0) and Hospital (20 per cent).

The need for professional development was ranked highest by Hospital (80 per cent) and Regional Centre (100 per cent). The lowest proportion of response to this item was by Residential Provincial (5.3 per cent), Other Residential (0) and the Mental Retardation groups.

Improvement in staff/student ratio was seen as a low priority by most groups, except Residential Provincial (although these have one of the more favourable distributions of staff/student ratio), and Regular programs.

Improvement in initial teacher training was seen as a higher priority by Hospital (60 per cent) and Autistic (66.7 per cent) groups, with a low priority in other groups.

Improved contact with parents was partly endorsed by a Regional Centre program (33.3 per cent) and Other Residential program (100 per cent) but with a low response on the part of other programs.

The need for improved consultation was endorsed by only the Regional Centre (20 per cent), and Mental Retardation programs. The Regular program has, however, a response level which is above average for the whole group.

17.5.4 Provision for professional consultation and conferences (2/1)

On the priorities in improvement of language programs and on teacher training, it is of interest to compare views expressed by principals and teachers with the opportunities which are said to exist for professional development.

Provision for consultation and conference of a more formal kind was reported in 79 cases (85.9 per cent). If consultation/conference is available, this takes the form of:

Professional development days - 33 (35.9 per cent)
Consultant help - 24 (26.1 per cent)
Staff meetings - 8 (8.7 per cent)
Other - 10 (10.9 per cent)

Professional development days are viewed as the major vehicle of more formal consultation and conference, and consultant help is also important.

Regional Centre, and Autistic programs (100 per cent each) report a high priority for consultant help, followed by Hospital (33.3 per cent) and Other Language (33.3 per cent). The Other Language program is also committed to staff meetings as important for consultation/conference (100 per cent). Pre-school rates 55.6 per cent.

Examination of the nature of these various programs suggests that these choices are plausible and consistent, e.g. it is known that in many Pre-school programs there is a high level of staff interaction for review of program, goal-setting, and evaluation. By contrast, the programs dealing with severely-handicapped children, e.g. autistic, or in clinical/residential settings, rely much more on consultant help.

17.5.5 In-service provision (2/1)

Provision for in-service training is rated as high - 87 (94.6 per cent of programs). There is no significant variation, therefore, between programs. If in-service training is available, it takes the form of:

Staff meetings - 37 (40.2 per cent)
Professional development days - 34 (37 per cent)
Consultant help - 6 (6.5 per cent)
Other - 5 (5.4 per cent)

The Regular program has more commitment to professional development days as the vehicle of consultation (46.7 per cent) and the whole commitment of the Residential Provincial school (100 per cent) is to professional development days. By contrast, the Pre-schools view in-service training as taking place through staff meetings (66.7 per cent) as do Other Language (66.7 per cent) and Autistic (100 per cent) programs.

It is clear that in-service provision, to an important extent, is seen as a matter for the school or program itself. There is a sharp reversal between the low ranking of staff meetings for more formal consultation, or conference functions, and its high rank for in-service purposes. Professional development days retain their importance, but consultant help (rated high for more formal consultation and conference purposes) has a very low incidence as a vehicle for school in-service training.

17.5.6 Relationship with other schools (2/1)

Relationships with other schools are important as reflecting the goals and purposes of the program and the relationship of staff or students to other programs. Arrangements were as follows:

Exchange of students (formal, academic interchanges) - 19 (20.7 per cent)

Exchange of students (informal, sports, etc.) - 17 (18.5 per cent)

School/program acts as resource centre - 15 (16.3 per cent)

Exchange of teaching staff - 8 (8.7 per cent)

It seems that programs or units are served mainly by their own school and that there is some (but limited) interaction with other schools and resources. Examples would be sending students to another school or program for some specific curricular/academic purpose, or using a gym/swimming pool in another school (as might occur for some of the Pre-school programs seen).

Programs such as the Residential Provincial (especially the aphasic program) but also to some extent the basic program for hearing handicapped in these residential schools, served as resources for their community. Units such as the Regional Centre, and possibly the Hospital programs, are likely also to be viewed as resources for visiting and for ideas. There is, however, very limited interchange of staff. This raises the question of whether more such exchanges between different schools and programs would have value in professional and educational terms - in reducing the isolation of programs, and in sharing experience, techniques, and resources.

The data show that the Hospital and Regional Centre programs, as anticipated, acted as resource centres in 100 per cent of cases. The Residential Provincial school acted as a resource to the extent of 33.3 per cent (it looks as if this refers to the aphasic program). Exchange of staff was also noted for the Residential Provincial programs (33.3 per cent). Other Language (including a clinical/residential program closely related to educational provision) 33.3 per cent, and Autistic 33.3 per cent, both viewed themselves as resources to some degree. There was little commitment to this kind of exchange by any other kind of programs.

17.5.7 Visits to the program from other schools (2/1)

Visits from other schools should be closely associated with the school's acting as resource centre. A high proportion of visits from other schools was reported: 67 (72.8 per cent). This was most marked for specific programs such as Hospital (100 per cent)

Regional Centre (100 per cent) and Other Residential (100 per cent) which provide specialized programs for severely handicapped children -- in one instance, the original Bliss Symbol program, and in the other instances, programs for autistic and other severely behaviorally handicapped children.

SUMMARY

The findings in this chapter are too detailed and complex to be readily summarized. They provide a background for understanding the organization and resources which contribute to the programs for language-handicapped children. Particularly interesting information comes to light concerning teacher/student ratios, size of school, program, and the kind and level of full and part-time staffing.

The pattern of goals and programs provided by different facilities is reflected in the differences in patterns of organization and staffing.

18 Programs

This chapter examines the programs provided for language-handicapped children in terms of the reported goals, forms of grouping, motivation, teaching approaches, content of programs and materials.

18.1 The Goals of the Program

Goals are commonly assumed to be the definition and starting point of an analysis of curriculum, and to govern teaching procedures. The principals and the teachers were asked to state their perceptions of the goals of their school/facility and of their program respectively. The bases for the questions were: the aims of education enunciated for the Primary and Junior program by the Ministry of Education (e.g. "The Formative Years") and the kinds of goals relating to content and sequence of instruction set out in the questionnaire instruments of "Formative Curriculum Evaluation". Weiss et al : O.I.S.E. 1972.

A recurrent difficulty, in research using stated verbalized goals, is that teachers can find it difficult to formulate their actual aims and objectives explicitly, or to verbalize their actual practice. It is possible that they present generalized statements, drawn from general belief or philosophies, or based on reading, which may or may not relate directly to their daily practice in the classroom.

Goals tend to be stated in very explicit terms, viz. "behavioral objectives", kind and level of task, and precise criteria for mastery which can be defined for short segments of learning or restricted tasks; or they are very general in nature. One difficulty is to connect these levels of planning and execution.

Goals, too, may be stated essentially at the level of theoretical intent rather than empirical aims (in terms of the system set out by Stake in his curriculum/evaluation theory), or refer to anticipated outcomes rather than actual outcomes.

Since goals are so much a part of actual decision and action, they are to some degree falsified by being verbalized and defined separately, in being considered as a separable part of planning and executing teaching. In theory, the definition of goals precedes decision and instruction; in practice, goals are constantly modified by experience of the outcomes of teaching or may, in fact, be defined clearly only after teaching has been completed and results are at hand. Furthermore, the objectives which directly guide the selection of content and technique by the teacher, in carrying out particular tasks of instruction, are usually specific and personal. They may, or may not, have direct relationships to goals defined for the whole school or school system.

As a matter of methodology, an attempt was made to follow the techniques described in guidelines such as "Formative Curriculum Evaluation" in which goals are defined, compared, and ranked in verbal terms.

Experience in the present study confirms that -- at least in this area of handicap -- it is unrewarding to ask teachers to state goals verbally as distinct from describing, explaining and justifying their choice of content, materials, and instructional approaches. The ranking of a set of stated goals (as was attempted with principals) may sharpen choice, but does not deal with the semantic difficulties of precisely limiting the practical meaning of goals, in terms of practice as well as philosophy, and in linking these goals directly to the variety of practices observed or reported in the classroom.

In future studies of classroom organization and curriculum, it is recommended that alternative techniques should be developed.

They would need to be observational, i.e. deriving goals from observing practice, as was done, in part, in the analysis of practices and materials reported later in this chapter. They should also be indirect or oblique, i.e. measuring preferences without asking for direct statements of belief. This may be done by developing techniques such as Kelly's "repertory grid" (Kelly (1965)).

Put in simplified form, the respondent identifies two groups of concepts (or persons, or practices) which appear to him to be similar in some important respect as contrasted with a group which is perceived as different from the first two in that respect. The various concepts (or persons or practices) can be classified and re-classified successively by this technique until there emerges a structure, of preferences or meanings, which reflects the respondent's real semantic framework, i.e. how he sees those concepts as related and what values he attaches to them.

Alternatively, a simpler indirect technique such as the "semantic differential" of Osgood, Tannenbaum and Suci (which owes some of its ancestry to the Kelly concept) could be used to obtain some of the specific structure of values and preferences of a particular teacher or school.

The following conclusions on goals and realization of goals is based on replies by principals to specific questions on Schedule 2/1.

18.2 Stated goals of the principal (2/1)

The goals stated by principals for their schools/facilities on behalf of themselves and their staff were, as described and ranked:

	No.	Per Cent
To develop social/self awareness in the student	65	70.7
To prepare the child to adjust to society	59	64.1
To develop good mental health	51	55.4
To develop awareness of the environment	50	54.3
To develop child's language to optimum	49	53.3
To develop academic achievement (apart from language)	47	51.1
To improve social interaction within school group	45	48.9

To improve self-help/adjustment skills	38	41.6
To improve expressive language	37	40.2
To improve receptive language	35	38.0
To get the child up to his mental/age level	35	38.0
To help the child accept his limitations	34	37.0
To give the child effective/alternative modes (of communication)	30	32.0
To return the child to a less extreme form of special education	29	31.5
To return the child to the regular school	23	25.0

In these condensed and summarized responses, the obvious emphasis is on generalized goals. The goals with highest priority are those dealing with adjustment or awareness, i.e. coming to terms with handicap and its effects. It is noteworthy that specific aims, such as returning a child to a less extreme form of special education or achieving a return to a regular school program, are of lower priority, though still significant for between a quarter to a third of respondent facilities. Clearly, the child in the program is regarded as handicapped and needing help to adjust, in the short or long run, to develop minimum adjustment and independence skills, i.e. to have remedial and compensatory education and accept limitations rather than be returned to a normal setting.

By contrast, the optimum development of language ranks fifth. Improving expressive and receptive language rank ninth and tenth. It is also interesting to find that giving a child more effective or alternative means of communication, which might have been expected to be the first, or at least major, aim is listed third from last, endorsed by less than one third of respondents.

Sixth in rank, for just over 50 per cent of programs, is the emphasis on academic achievement, higher than specific emphasis on language and communication.

If goals define, or if they reflect, the actual content and procedures of the program, then this suggests that there is a very strong emphasis in programs on various kinds of behavioral and personal adjustments, and on the academic skills. The emphasis on general academic skills is confirmed by later analysis in this chapter.

18.2.1 There are differences in pattern between different kinds of program.

Autistic, Regional Centre and Hospital programs have much in common, but the Hospital and Pre-school programs attach less importance to academic skills (each 33.3 per cent response). The Pre-school also has less commitment to the aim of developing effective/alternative forms of communication.

The Residential Provincial school also attaches lower priority to developing alternative forms of communication than to other aims, i.e. it is assumed that the school has developed a specific program which is the most effective in fostering communication in the child.

The Other Language programs attached lower priority to academic achievement than to social adjustment, and developing a child to his own level (66.7 per cent).

The Regular program attaches high priority to academic achievement (60 per cent) but much less to improving expressive language (33.3 per cent) and little to improving receptive language (17.8 per cent). It does not see, as a major aim, developing effective/alternative forms of communication in the child (13.3 per cent).

More interesting, and specific in some ways, are the responses to questions on whether the child is to be moved to a less extreme form of education or to a regular program. There is no commitment to this goal (of moving to a less extreme form of education) by the Residential Provincial programs (0 per cent). Children in these programs are severely handicapped, whether aphasic or hearing impaired, and are unlikely to move to programs which cannot cope with their severe and persistent handicap. Other Residential also has a zero response for this question. This program provides for severely handicapped adolescent autistics who are being prepared for basic life adjustment, and for whom movement to any other less extreme form of special education is improbable.

But Other Language programs also see this aim as having lower priority (40 per cent) and even in the Regular programs, which account for the majority of language-handicapped children, only 20 per cent endorsement is given to the aim of moving a child to a less special form of placement.

The probability of returning a child to a regular school program is seen as low by the Regular language-handicap programs. This may well be because the child is perceived as already receiving his education within a "regular" setting, or potentially integrated with non-handicapped children. However, the comparison of this finding with the previous finding (that the child is not anticipated as likely to go to a less extreme form of special provision) suggests that the language-handicapped child is not typically perceived by principals as a regular or non-handicapped student.

The Autistic programs(0 per cent) do not regard either of these aims (less special education/return to a regular classroom) as realistic, presumably in view of the severe and persistent learning handicaps of the children in their programs.

By contrast, the Residential Provincial programs (66.7 per cent) perceive integration with a regular class as a much more feasible or acceptable goal. There is an apparent contradiction between this finding and the previous finding that children from Residential Provincial schools are not likely to move to a less special form of education. There may well be difficulties in definition on the part of the respondents, i.e. integration in a regular program nevertheless connotes having special techniques and learning aids and the support of teachers from the residential school in integrating hearing-impaired children into regular schools.

The aims of the mental retardation facilities appear, realistically, to reflect their practice, i.e. very low estimates of adjustment to less specialized forms of education or return to regular classrooms. Endorsement of these aims: Trainable Retarded - 19.1 per cent; Mental Retardation facilities - 25 per cent.

18.3 Realizing the goals proposed (principal) (2/1)

The prior discussion of the difficulty of defining general goals precisely, and relating them directly to practice, implies that it is of value to look at the ways in which the respondent realizes those goals in terms of techniques, materials, or organization of learning.

Principals reported that goals were realized by:

	No.	Per Cent
Special programs to meet needs of children	24	26.1
Organization of groups/time tables	19	20.7
Selection of staff for the program	5	5.4
Providing special facilities/space/equipment	5	5.4
Early intervention	4	4.3
Sufficient support in developing materials	3	3.3
Individualized instruction (pace, level)	2	2.2
Effective evaluation of program	2	2.2
Professional support to the school	2	2.2
Other	2	2.2

There is a significant variation between different types of program in ways of realizing goals.

It is clear -- almost a tautology -- that the most important means for realizing goals, in the view of the principals replying to Schedule 2/1, is the general provision of "special programs". The administrator also stresses the essential need for organization of groups of children, and effective disposition of time and teacher's resources.

Compared with these two major reasons, all 8 others comprise 26 per cent of the responses. It is of interest that consideration of "training of teachers", or "provision of appropriate training courses" is omitted by the principal, but this is consistent with previous responses. It is rather surprising, however, that "selection of staff" has such a low priority.

Low priority is given to the importance of "special facilities" which makes for an interesting comparison with priorities stated elsewhere for improvement of facilities.

Early intervention in dealing with language handicap also receives an unexpectedly low rating, in view of the research and administrative experience from the U.S.A. and the U.K. underlining the need to institute effective language remediation programs at the earliest possible age; if possible, in the pre-school stage. (Kleffner (1973); Eisenson (1972))

It will be recalled that the majority of children, as revealed by the analysis of individual cases, are diagnosed and placed, at earliest, by age 5 to 6 years.

Evaluation of program, as an effective means of improving program, and realizing the aims of teaching, also has a low priority for the principal. This low priority is consistent with later findings on the low ranking given, by principals and teachers, to evaluation of the effectiveness of programs, as compared with selection and intake of students and evaluation of progress.

Essential features of improvement of programs are "formative" (short-term, adaptive) evaluation of program, and "summative" evaluation, i.e. comparisons of effectiveness of different programs for different groups, in representative conditions, and measured by final outcomes of progress over a period of time.

Writers as diverse as Kleffner and Crystal point out that effective programs should be self-defining, i.e. indicate where the child is to enter, what content or skills are relevant, and also provide inbuilt measures of progress; they should also provide for some form of comparative judgement of effectiveness.

If it accurately reflects real belief, this low priority for evaluation suggests that there is need for increased knowledge of the principles of program selection, development, and evaluation, as basic tools of administrator, planner, and teacher.

18.3.1 Examination of different programs reveals patterns

In emphasis on the need for special programs, Autistic and Residential Provincial programs rate this high (66.7 per cent); Other Language (33.3 per cent); Regular (28.9 per cent). Other facilities attach little or no importance to this approach.

By contrast, Hospital programs endorse the importance of Organization and time table (33.3 per cent) as do Pre-school programs (22.2 per cent), to some extent. The Regular program attaches a surprisingly low priority to this factor (15.6 per cent) which may mean that it is unimportant, or that it is so much taken for granted that it is not mentioned. Autistic and Residential Provincial (autistic programs) attach low importance to this factor.

Hospital (33.3 per cent) and Regional Centre (100 per cent) are the two facilities which emphasize the importance of specialized space and facilities for obvious reasons, i.e. in presenting a specific program such as the Bliss Symbols, or organizing intensive one-to-one behavioral programs for severely handicapped autistic or behaviorally disturbed children.

Other Language programs (which other evidence suggests are concerned with individual therapeutic or clinical/educational approaches) emphasize the individualizing of teaching approaches (33.3 per cent).

The Autistic program is the only one to give any emphasis to evaluation (33.3 per cent).

18.4 The goals expressed by teachers (Schedule 4/1)

The goals expressed by individual teachers within programs were gathered (1) by teachers ranking preferred teaching approaches; (2) teachers ranking kinds of language or academic content to which priority was attached; (3) verbalized statements of aims. Because of the variety of responses, these goals were re-classified and coded as follows:

	No.	Per Cent
Individualized goals (specific objectives for individual mastery) emphasizing progress in language/communication	107	50.2
Generalized goals emphasizing social skills/self-help	90	42.3
Individualized goals emphasizing social skills/self-help	75	35.2
Generalized goals emphasizing progress in language/communication	55	25.8
Individualized goals emphasizing management of child behavior	55	25.8
Generalized goals emphasizing need for academic remediation	41	19.2
Generalized goals emphasizing integration of various aspects of learning	38	17.8
Individualized goals emphasizing integration of program	36	16.9
Individualized goals emphasizing academic remediation	35	16.4

As with the principals' goals, there is emphasis on developing social skills and self-help, but there is relatively less stress on academic remediation. The teacher, or the person in direct charge of teaching the program, sees the practical goals of promoting progress in language and communication as very important (first and fourth ranking goals). Reference to the goal of behavior management suggests that an important task, in the program for language-handicapped children, is to achieve well-adjusted behavior and preparation for learning.

It was earlier noted that facilities, such as Pre-school, emphasized the importance of behavioral difficulties as their major concern. Facilities such as the Regional Centre also have a high proportion of children with severe behavioral/emotional difficulties directly related to failure in development and learning. Groups such as the autistic require effective behavior management; a significant stage in teaching not only autistic but language-disordered children in general is the establishment of effective attending and imitative behaviors. (See Santa Barbara Autism Project (1976); Eisenson (1972))

Academic progress is also seen as important. This is confirmed by later analyses of the content and materials of teaching programs.

18.4.1 Differences in pattern between programs

Individualized goals emphasizing progress in language (#1) are highest in Regional Centre (100 per cent); Hospital (80 per cent); and Autistic programs (66.7 per cent). These are major goals also for the Regular programs for language-handicapped children (48.2 per cent).

In the mentally retarded group, the Developmental Centre (70 per cent) had a high priority for this set of goals.

Generalized self-help goals are highest for Autistic (100 per cent); Other Residential (100 per cent); but low for Regional Centre (0) and for Hospital (20 per cent). Within the Mental Retardation group, oddly enough, Trainable Retarded score high but Developmental Centre low (20 per cent).

By contrast, individualized self-help goals are ranked highest by Regional Centre (100 per cent); Hospital (80 per cent); and Pre-school (62.5 per cent); whereas Autistic (16.7 per cent) and Other Residential (0) are correspondingly low. In other words, generalized and individualized self-help/social skills goals are alternative to one another. This seems to reflect the difference between a group/classroom program and high individualized behavioral management in which each individual literally has his own program.

Goals emphasizing behavioral management are predictably higher for Regional Centre (100 per cent) and Autistic (83.3 per cent). The occurrence of the Pre-school (62.5 per cent) in this group is also consistent with the general emphasis in the Pre-school programs on children with behavioral difficulties. Lowest on this set of aims are Hospital (0); Residential Provincial (5.6 per cent) and Other Residential (0).

Generalized academic goals are highest for Hospital (60 per cent), i.e. the Ontario Crippled Children's Centre's Bliss Symbol program. The Regular program endorsed these aims to the extent of 20.5 per cent, i.e. significant but not high. A similar pattern is found for generalized goals emphasizing integration of various areas/aspects of learning. Highest on this were Hospital (80 per cent) and Autistic (66.7 per cent) but also some commitment by Pre-school programs.

Emphasis on individualized goals integrating learning was highest in Regional Centre (66.7 per cent) and Pre-school (45.8 per cent). This is an emphasis on individual programs for young/handicapped children.

Emphasis on individualized academic goals was generally low. Unexpectedly, it was relatively higher in the mental retardation groups. The Regular program endorsed this set of aims to the extent of 20.5 per cent.

Behind the statistical patterns for stated goals can be discerned some patterns of current practice in the various programs, e.g. the highly individualized behavioral programs for severely disturbed children in Regional Centre and part of the Hospital programs; the preferential use of behavior management techniques by some programs, particularly for the autistic. There is a general emphasis on the importance of progress in language.

18.5 Teachers' Approaches to Learning (Schedule 4/1)

Teachers were asked whether they favoured an approach to learning which depended on "information processing" (i.e. acquisition of information and skills, implying a more or less direct and structured instructional approach) or learning through the organization of "experience and activity".

The division in preference is fairly even: 122 (63.5 per cent) prefer information processing/skill teaching approaches and 105 (54.7 per cent) prefer an "experience" approach. This division in approach (and in fact overlapping between the two extremes of philosophies/practices in the same class or teacher) is reflected in an analysis later in this chapter in which a commitment is found to both structured/programmed and developmental approach in language teaching.

18.5.1 Differences in pattern between programs

Highest on "information processing" were Autistic (100 per cent); Residential Provincial (80 per cent); Other Language (78.6 per cent); and Regular programs (71.8 per cent). This reflects known facts: the need for highly structured teaching by the autistic; the existence of a highly structured language program (the Association Method) for a high proportion of the known aphasics in the Residential Provincial program; but it also illustrates the emphasis on skills and direct instruction even in programs in the elementary school which deal with less handicapped children.

By contrast, the highest emphasis on "experience" was found, as expected, in Pre-school (80 per cent) and Hospital (60 per cent) and the lowest emphasis in Residential Provincial (20 per cent) and Autistic (0).

18.6 Other Questions: Instruction and Structured Materials vs. Assignments (4/1)

(1) An attempt was made to assess the same area of questioning by asking teachers if they would rank teaching approaches they preferred,

viz. mainly instruction; the use of structured materials; use of individual assignments and demonstrations. The answers did not permit of any differentiation between groups or programs. All programs, in effect, claimed a commitment to all these approaches to a high degree. The question, therefore, is non-discriminating or ambiguous.

(2) Another question asked directly how much teaching was done by "class, group, and one-to-one" methods. Again, there was almost equal commitment to all three approaches in all programs.

18.7 Motivation and Re-inforcement (4/1)

It seemed plausible that differing beliefs and practices in organizing teaching instruction would be related to the particular kinds of motivation and re-inforcement felt to be necessary in organizing the child's tasks of learning and giving confirmation/reward for success.

The responses show, however, that extrinsic incentives (teacher's approval) are by far the most widely used (in 77.2 per cent of cases).

Extrinsic rewards of a more specific behavioral kind, viz. tokens which will later earn rewards, or primary rewards such as food, are used to a lesser extent but are important (37.9 per cent of respondents).

Motivation by extrinsic means such as modelling on or imitation of teacher's behavior is perceived as much less important, since it is endorsed in only 13.1 per cent of cases. This seems a little strange in the light of later findings that the preferred technique in teaching language is modelling on the teacher's response. Clearly, the use of modelling on the teacher, as a form of incentive, is viewed as being different from modelling/imitation as a specific technique in instruction. Modelling on the teacher also implies reliance on his/her approval.

Intrinsic motivation, such as completion of task/mastery, is judged as of minor importance for most programs dealing with language-handicapped children (17 per cent of response); intrinsic motivation through curiosity or need to explore the environment is judged as even lower (8.3 per cent).

So, language classrooms are largely structured around teacher approval and direct rewards as means of informing the children of correct response/success and motivating their learning.

18.7.1 Differences in pattern between programs

The relatively lowest proportion of teacher approval as motivation is in Regional Centre (66.7 per cent) and Other Language programs (69.2 per cent). The Regional Centre endorses direct rewards (100 per cent) as would be expected in programs emphasizing behavioral management and operant-conditioning techniques. By contrast, the Other Language programs emphasize modelling on teacher as motivation, as would be expected in one-to-one language therapy situations or clinical/educational programs with a stress on individual interaction between teacher/therapist and child.

The Autistic programs are higher, as expected, on both approval and direct reward (100 per cent of each).

The Residential Provincial programs do not rely on token or primary re-inforcement but on teacher approval (72.2 per cent) and on the satisfaction of completing a task within a graded, organized sequence of learning (55.6 per cent) -- again reflecting the existence of one or more structured language programs with their own in-built stages of success. A videotape of the Association Method program illustrates the effect on children's behavior of re-inforcement through teacher approval, repetition, and the importance of success in a well-defined task.

18.8 The Organization of the Timetable

The above discussion has approached program through inference from teachers' views on the ways they teach and the ways they focus and organize learning through various kinds of motivation. Another viewpoint is the organization of the timetable.

The tabling of teaching time, and the organization of teaching resources, is central to the planning of effective teaching.

The choice of a more fixed, or more flexible, timetable, focussed on subject matter or on children's needs and stages of learning, will (within the practical limits fixed by the time and resources available) also reflect to some degree perceptions of the needs of children and beliefs/preferences about teaching approaches.

The practical exigencies of teaching may over-ride variation in approach between different teachers and different programs. Thus, despite the reported variation in teaching approaches and kind of program, the majority of classrooms (87.1 per cent) report that they have a "timetable", i.e. specific time slots allocated to specific subjects or content of learning. This does not prevent teachers from claiming that they organize individual timetables for children, either instead of fixed time-slots for all or, as the analysis suggests, within a fixed content timetable.

Over half (55.2 per cent) of programs claim to individualize in this way.

It is curious to find that over half the schools report a "rotary" arrangement (53.7 per cent). Since programs are drawn mainly from elementary schools and the pre-school-primary-junior stages of education, this does not necessarily refer to students leaving their own home base to visit other classrooms to be taught specific subjects by a variety of teachers. It may refer, in this usage, to children rotating between a number of different tasks, or subject-content areas in learning, with the teacher dealing with different individuals and groups in turn.

It is of interest that the timetable is said to be "the same for all students" in 34.3 per cent of cases. By comparison and subtraction from the total, this would be the groups of students who do not receive a high degree of individualized attention or timetabling, i.e. are perceived as one group or class. If the statistics can be taken at face value, there is an extraordinarily high proportion of children receiving a "class" approach to instruction in an area of learning which requires the program to be adapted to the child (see Chapter 11 in Introduction) and not the child to the program.

18.8.1 Differences in pattern between programs

The programs with lowest proportion of timetables with specific time slots were Hospital (50 per cent) and Other Language (75 per cent).

The program highest on individualized timetables were: Regional Centre (83.3 per cent); Other Residential (100 per cent); Autistic (100 per cent), i.e. programs dealing with severely handicapped/behavioral/disturbed/autistic children.

The "rotary" arrangements are found mostly in Other Language (83.3 per cent) and Residential Provincial programs (73.3 per cent). From observations, these arrangements reflect both rotation within the classroom and (for the Residential Provincial school) between classrooms for older children. The mental retardation programs also seem to have a high incidence of "rotation" of children between groups or teachers.

The timetable which is the "same for all students" is found, to an above-average extent, in Other Language (50 per cent) and the Regular programs (42.9 per cent). It is also found in Developmental Centres (44.4 per cent). This suggests a "class" basis of organization for language teaching. This applies to a high proportion of all children with language handicaps, since the Regular programs account for so many of them.

18.9 Grouping for Program and Instruction

Grouping for instruction and use of resources is the teacher's most fundamental and powerful way of handling the variety of abilities and needs in students. It obviously interacts with timetabling in complex ways.

Teachers were asked to describe how they formed groups for instruction and, even more important, for what reason.

18.9.1 The organization of major groups

Teachers were asked to describe the major groupings they organized (as distinct from individual teaching) and the reasons.

Groupings were mainly based (107, 62.2 per cent) on the needs of the language program (direct instruction) or the organization of language games and activities (58.1 per cent).

Grouping is not necessarily fixed. In 42.4 per cent of instances, children were "not grouped for instruction at all times".

The basis of grouping was for reading in 36.6 per cent of instances. This high proportion of grouping for reading (i.e. not oral language) reflects the strong general academic goals and content in programs for language-handicapped children. Supporting this observation of the academic basis of grouping is the fact that children were grouped for math in 27.9 per cent, for science in 19.8 per cent and even for such a specific skill as spelling in 14.5 per cent of instances.

Flexibility in grouping is, however, indicated not only by the statement "not always grouped" above, but by the finding that classes were grouped "at times according to specific need" in 35.5 per cent of instances.

18.9.2 Differences in pattern between programs

Grouping according to language instruction is most frequent in Autistic (100 per cent); Hospital (75 per cent) and Residential Provincial (68.8 per cent) programs (as well as in the Mental Retardation group). Lowest was the Regional Centre (0), previously identified as having a strong emphasis on one-to-one behaviorally based programs.

Grouping according to language activities and games follows a similar pattern across programs, suggesting that these activities are similar, or complementary, to direct instruction and are organized similarly.

Those "not always grouped" are the Regional Centre (100 per cent), Autistic (100 per cent) and Hospital (75 per cent) programs, i.e. the "individualizing" programs, (also the young mental retardation groups). Low on this factor were Residential Provincial (in which the instructional groupings are explicit and formal, related to a highly structured programmed language approach) and Other Residential programs. There is, as expected, a marked similarity of pattern between "Not always grouped" and "Grouped at times according to specific need".

Grouping for reading is highest for the Autistic (66.7 per cent) which is unexpected, and Regular programs (55.4 per cent) which is expected. It is found to a significant extent in Residential Provincial (37.5 per cent) and Other Language (37.5 per cent) programs.

Grouping for math follows the pattern for reading, with the highest response (40 per cent) in the Regular program, and 33.3 per cent for Autistic.

Grouping for science is limited to the Regular program, but with very small proportions in other facilities. Grouping for spelling is found mainly in Regular (24.6 per cent) and Autistic (50 per cent) programs.

There is a contrast between groups; there is also a contrast between facilities which appear more class/group based and those which emphasize individual programs.

18.10 The Organization of Individual Learning (4/1)

A high proportion of facilities claim to organize instruction according to individual need (72 per cent).

Individual teaching is mainly for language instruction (68.1 per cent) but a surprisingly high proportion is for subject/content instruction: math (54.9 per cent); reading (53.3 per cent); and spelling (37.9 per cent). Individual organization for language games/activities is arranged in 44.0 per cent of cases.

A high proportion of individual "groups" vary from time to time throughout the day, i.e. there is not necessarily a fixed time and situation in which the teacher gives individual instruction or supervision, but it varies from time to time according to need in about 46 per cent of cases.

18.10.1 Different patterns in different programs

The facilities with the lowest levels of organization by individual need, from time to time, are Residential Provincial (0) and Other Residential (0).

This does not mean that there is no individual attention and work, but rather that these arrangements are fairly fixed for specific individuals (or groups) and times. The Residential Provincial program, as noted several times, is quite explicitly organized around a structured program requiring specific timetabling, grouping and sequencing of class and individual work. The lowest proportion of grouping by direct-language instruction is the Other Language group (30 per cent). In this regard, as in others already discussed, the Other Language program differs from other programs.

Individual organization for math learning is high in the Autistic (100 per cent) and Hospital (60 per cent, i.e. Bliss Symbol) programs; also in the mental retardation groups. Even the Pre-school programs (36.0 per cent) appear to be organized for math as a separate area of learning. Individual organization for reading follows a pattern similar to math: Autistic (100 per cent) and Regional Centre (83.3 per cent) rank highest and this basis of individual work is very important in Regular school programs (60.3 per cent).

The patterns of individual organization for language activities/games and spelling are similar. Spelling is individually organized in Autistic and Regional Centre programs (100 per cent each).

The Residential Provincial programs do not emphasize reading, math, or spelling as major bases for individual work.

It is unexpected to find relatively high proportions of subject organization for individual work (40 to 60 per cent) in the Pre-school programs.

"Other" forms of individual organization are found mainly in the Regional Centre (100 per cent) and Autistic programs (83.3 per cent) i.e. arrangements for specific individual training, behavior-modification and skills in autistic behaviorally-disturbed groups.

What is unexpected is the confirmation that programs for language-handicapped children cover the range of academic content or emphasis found in the regular elementary school and that organization for both group and individual teaching is often based on subject/content (academic) lines, even in groups of children with severe handicaps of oral language and communication.

18.11 Reasons for Grouping Children (4/1)

Teachers were asked to express their reasons for grouping children in various ways and for various purposes. Important purposes are: Stimulating children to social interaction, 79.4 per cent as well as giving opportunity for language interaction, 70.2 per cent. Convenience in terms of content teaching accounts for 41.1 per cent of reasons for grouping. This reflects the commitment to grouping and teaching in terms of academic subject content, already discussed. This reason, convenience for subject grouping, ranks unexpectedly higher than what might have been expected to be the main basis of grouping: group or individual level of language, or specific needs, or the demands of a particular language program. Grouping, in terms of language needs or program, accounted for only 29.8 per cent of reasons for grouping.

Convenience in terms of time (i.e. allocation of teacher's time, timetabling) accounted for 21.3 per cent of reasons for organization.

Despite the heterogeneous nature of many programs, intellectual level of the child was given as a reason for grouping in only 21.3 per cent of cases. This low priority conflicts, to some degree, with the principals' statements that grouping by mental or developmental level is a relatively important form of administrative organization. On the other hand, once the class or teaching group has been formed, or children placed, by taking into account mental level, it is obviously not very useful for the teacher to use the same criterion to subclassify the students.

Since the present discussion is concerned with groups of children, it is not surprising to find that having a specific language problem is not an important basis for grouping (21.3 per cent of instances). By definition, if a child has a specific language difficulty, it will be difficult to group him with others who have different difficulties.

Age of child is an insignificant factor in grouping (3.5 per cent) since age as such has only an indirect relationship to stage of language acquisition, or specific language problems in children who are several years retarded in language. Once again, the principals attach more importance to this factor, and it is probably taken into account at the administrative level of placement and school grouping.

Finally, grouping is not used as a basis for remedial work (8.5 per cent only) since clearly remedial work in language needs to be individual.

18.11.1 Differences in pattern between programs

Lowest in using socializing as reason for grouping is the Residential Provincial program (33.3 per cent), i.e. grouping serves language-instructional purposes.

Use of language interaction as a reason for grouping is again low in Residential Provincial (11.1 per cent) and also Other Residential (0).

For most of the children in these two programs, at the earlier stages of language instruction, it is more relevant to get them to master language; they are not yet ready for the later stages of language (Kleffner (1973)), i.e. application, use, and discourse.

Grouping by subject-content recurs. It is low in Residential Provincial (11.1 per cent) and Other Residential (0), as in previous analyses of data, but is high for Regional Centre (100 per cent) and fairly important for all other facilities, in particular Regular programs (47.2 per cent).

Grouping by language level as such is high for only the Autistic group (83.3 per cent).

Grouping on intellectual level is found in the Residential Provincial program to some degree (33.3 per cent) and Regular (28.3 per cent), also in Pre-school (30 per cent).

Grouping by specific language difficulties (very often one-to-one) is highest in the Autistic program (50 per cent).

18.12 Reasons for Organization of Individual Instruction (4/1)

The reasons for individual instruction emphasize the importance of considering varying individual levels of language (75.1 per cent); different levels of general development (63.9 per cent); and specific language problems (50.9 per cent). Remedial work probably must be individual (50.3 per cent of cases).

Checking on individual progress (49.7 per cent) requires opportunity to observe and work with the individual.

Managing the individual's behavior (repeatedly found to be an important issue in these programs) must also, by definition, be handled individually (42.6 per cent of cases).

The need for flexibility in arranging individual work, already noted, is reflected in the comment that individual instruction "depends on the child's program" (34.9 per cent of cases) or is based on the child's varying levels of performance on different subjects (33.7 per cent of cases).

As in the arrangement of larger teaching groups, age (4.7 per cent) is an insignificant factor in organizing individual instruction.

18.12.1 Difference in pattern between programs

Individual organization of instruction to deal with varying levels of language is found least in Residential Provincial (50 per cent), and Other Residential (50 per cent) groups, particularly in Other Language (only 16.7 per cent response). As noted previously, explicit group organization and teaching appears to be an important facet of the Residential Provincial program in structured language.

Individual instruction according to different levels of development is again found least in Residential Provincial and Other Residential. Surprisingly, only 50 per cent of Development Centres make different levels of development an explicit basis for individual learning.

Individual instruction for specific language problems is again low for the Residential Provincial programs (16.7 per cent). It is, as expected, high for Autistic (100 per cent), Regional Centre (83.3 per cent), Pre-school (81 per cent) and Hospital (60 per cent), i.e. for young and severely handicapped children.

Remedial work is given as an important reason for individual instruction in the Autistic (100 per cent), Other Language (66.7 per cent) and Regular (69.2 per cent) programs, but is not perceived as important by Residential Provincial, Regional Centre, Hospital or Pre-School programs. Possibly this is because these programs are not concerned with remedial work in the proper sense, but with developmental teaching related to the child's stage of language learning, on the one hand, or organized, structured approaches to building up the child's skills and behavior (which are intended to be precise and comprehensive enough to eliminate the need for going back to remediation).

Use of individual organization to check on individual progress is again predictably low in Residential Provincial (0) where the group program itself is used to measure progress and to evaluate the program. Checking on individual progress is, however, important for the Autistic program (100 per cent), Hospital (100 per cent), Regional Centre (100 per cent) and Pre-school (71.4 per cent).

Use of individual organization to manage behavior is, once again, predictably low for Residential Provincial (16.7 per cent) but also unexpectedly low for Other Residential (0). It is an important arrangement in Regional Centre (100 per cent), Autistic (100 per cent) and Pre-school (85.7 per cent), where the programs are concerned with establishing effective behavior management by operant-conditioning or developmental techniques. Other Language (66.7 per cent) also has a high proportion of this kind of arrangement, reflecting the clinical/educational patterns of dealing with individual children already noted of this set of programs.

Individual organization depending on the child's program is an important aspect of organization for the Hospital (100 per cent), Regional Centre (100 per cent), Autistic (83.3 per cent) and Pre-school (85.7 per cent) programs, for the reasons given above. It will be noted that these facilities constantly recur as a group with similar characteristics. Other facilities give this a low priority, except for the mental retardation facilities.

Organization of individual work at different levels in different subject areas is found mainly in the Autistic (100 per cent) and Regional Centre (66.7 per cent) programs, i.e. for autistic groups. (It is also a significant factor for the mental retardation groups.)

18.13 The Range of Content in the Program

Teachers were asked to rank their programs in order of importance of the various areas of learning. An attempt was made to weigh these rank orders but the tasks of choice and discrimination were too complex in the present form of question. The basic areas of learning were as described in writers such as Gagne: language skills, motor skills, problem-solving skills (e.g. science, math), use of symbolic systems (e.g. math), expressive/aesthetic skills, and the learning of values. These are not the conventional divisions of subject matter, nor are they the dimensions of disciplines discussed by Phoenix (1964) or Hirst (1967). They do, however, (from a behavioral basis) describe the varying techniques of learning or skills in the curriculum rather than mere content.

Teachers varied in the ranking and weighting attached to these various areas, but the summary data show that they see the whole range of skills/content as falling within their goals of instruction. There was practically no difference in the (very high) percentages for each area.

There were very few differences between types of program.

18.14 The Nature of the Language Program: Developmental, Structured, Prescriptive

The detailed description of program and materials preferred by teachers were coded into a small number of categories. The reader is referred to the kinds of rating and procedure for analyzing programs set out in Chapter 11 and 12 on program in the Introduction. The present coding was considerably simplified, since the procedures for analyzing dimensions of program were being worked out, concurrently, with the collection of basic data and analyses such as contribute to this section. Aspects of program concerned with timetabling, organization of groups for instruction, and preferences for teaching approaches (viz. skills vs. experience; instruction vs. experience; linguistic vs. academic content) included in the Chapter 12 checklist, have already been analyzed earlier in this chapter.

18.14.1.1 All programs were coded in terms of:

How far they were "structured", i.e. were based on an explicit choice and use of linguistic content and sequence.

The degree to which a teaching program is structured linguistically is not the same as the question of whether it is taught in a prescribed sequence, in a series of pre-planned lessons or a defined script governing the teacher's presentation of materials and instruction.

Programs which are highly structured in linguistic terms can be as flexible and developmental in presentation as Laura Lee's interactive material, or as prescriptive as the Gray-Fygetakis or Distar materials.

18.14.1.2 The second coding was to define whether a teaching approach and materials were prescriptive or "programmed", i.e. how far the materials and learning tasks were presented in a specific, explicit way, by direct instruction or governed strictly by the sequence in the text book, and how far the presentation was in the form of specific lessons or followed explicit instructions to both teacher and child, e.g. Distar materials.

18.14.1.3 Partly contrasted with the above, was an analysis of the program in terms of whether it represented a "developmental" approach. As discussed in Chapter 11 of the Introduction, a "developmental" program may mean a variety of things:

i) Developmental meaning (1) is the use of the child's stage of development in language, etc. to guide entry to the program, i.e. relating teaching and learning to the child's readiness and level of knowledge. This is essentially what Lee and Crystal suggest as the purpose of their diagnostic analysis of the child's mastery of linguistic structures.

ii) Developmental meaning (2) is the reliance on information about developmental stages to guide the choice of the sequence of tasks or stages to be learned, i.e. using guidance on what is known of the ways in which the child's linguistic structures follow one another.

iii) Developmental meaning (3), environmental, is the one most generally interpreted as the developmental approach. It can be defined as an approach which assumes the child can learn most effectively by being exposed to opportunities for activity, experience and interaction with a "natural" environment of objects, play situations, conversation, etc. It is assumed that the child can draw on this environment for stimulation in a way thought of as "natural" for young children in normal stages of development. It may be believed to be appropriate (to older/handicapped children) on the assumption that they are at an earlier developmental level, but can still be viewed as essentially less mature children.

In a nutshell, the assumption behind this approach is mainly that the handicap is due to developmental delay/distortion, not to missing abilities or deficits in the process of learning. In fact, the environmental definition of a developmental approach is likely, therefore, not to be "programmed" in terms of strict sequence of instruction but likely (but not necessarily) unstructured, i.e. not following a defined sequence of mastery of linguistic patterns.

18.14.1.4 Additionally, programs were analyzed in terms of whether they had a specific linguistic character (i.e. in teaching language structures or skills), explicitly adopted a choice of content and sequence based on what is known of children's language development, or on empirical knowledge of what are the best sequences of tasks in learning.

18.14.1.5 Within the linguistic category, an attempt was made to define whether programs were mainly (1) phonological (i.e. emphasized articulation, auditory training, production of speech sounds, intonation, etc.) or (2) syntactic (i.e. taught the child linguistic/grammatical structures such as word-sequence, subject-verb, noun phrase/verb phrase, negation, tense, person, number, etc.) or (3) based the teaching of language structures and vocabulary on sharply defined concepts and meanings important to the child and to the learning of language, i.e. semantics.

Important dimensions might be the ten or so categories defined by Brown (1973) or Schlesinger (1974), e.g. possession, identity, location, negation, or the distinctive features/categories of meaning such as male/female, singular/plural, etc. (Dale (1976)).

The syntactic approach may be represented by the early Miller and Yoder program (1972) for early learning of language, or by the Gray-Fygetakis programmed approach. The semantic might be represented by the Nisonger program (Horstmeier and McLean (1975)) or recent emphases in teaching the autistic children (Los Angeles County program (1977)) by selecting concepts and vocabulary which are meaningful and frequent in the child's experience.

Programs were usually complex, with various elements of the above kind in them, related to the different goals of the program, different kinds of material used in teaching, or different emphases in teaching used with different children, or the same children at different stages.

The coding for each program (in terms of the Fortran computer-coding) was therefore essentially a ranking of all characteristics, if at all present.

Thus it is possible for a program to be both "structured" and "developmental" or overlap in terms of other dimensions, though it is unlikely that there will be large elements of the prescriptive approach in an environmental/developmental program or the converse.

Arbitrary decisions had to be made. It was decided that the Peabody language program should be classified as "structured" (in contrast with other much more environmentally based programs) even though the basis of its linguistic content does not strictly follow any clear-cut system of language criteria such as those set out by Eisenson (1972); Lee (1974) or Crystal (1976). The Distar program was defined as "structured" linguistically, though the choice of content and sequence does not appear to favour any linguistic developmental staging, or theory of language, apart from empirical trial of the items used.

Programmed material was defined as (a) programs such as Distar; (b) behavior modification sequences; (c) strictly defined lessons or scripts for teaching; (d) the use of workbooks and similar materials, if this appeared to be systematic.

The data show the following:

18.14.2 The majority of programs for language handicapped children are developmental-environmental. They use a variety of environmental and social stimuli including the natural environment. They are not structured explicitly in any linguistic way. These accounted for 69 per cent of respondents.

The second most important emphasis was on a developmental(entry) i.e. tended to use information on the developmental stage, or readiness of the child, to guide entry to and choice of learning task in a program. This accounted for 57.4 per cent.

The third most important emphasis was on a developmental (sequence) approach, using developmental stages in language (at least in a general way) to guide the sequence of structures or skills to be learned. This was found in 50.8 per cent of cases.

It is true, of course, that the above categories overlap one another.

Fourth in order came emphasis on a "structured" approach in 47.2 per cent of programs.

Fifth, a high proportion of programs are also based on a prescriptive programmed approach (43.1 per cent), i.e. direct instruction, scripted lesson plans and pre-planned sequence of teaching. This is consistent with previous findings in this chapter that teachers place considerable emphasis on information processing/skills, on direct instructions, and on grouping in terms of subject-matter instruction.

The programs for language handicapped children in Ontario span the complete gamut of teaching approaches. They are either developmental, structured, or prescriptive, or may have a major emphasis in one dimension that also includes important elements of another.

Within the language-structured approaches, only a very small proportion (7.6 per cent) were found to merit the description "linguistic" in having a clear and explicit definition of goals, content, sequence, and procedures based on understanding and analysis of language acquisition. There may be elements of such approaches but they did not form the whole or even the major part of many programs.

Within the linguistic grouping, the largest group is the semantic (5.6 per cent of total responses), i.e. emphasis on concepts and dimensions of meaning as guides to language content and materials. Only one example of a semantic program was found. It was decided that the Bliss Symbol program should be classified as "semantic" since, though it is not concerned with spoken language, it sets out to communicate basic meanings. The Bliss Symbol programs, therefore, form a large part of this category.

Explicitly syntactic programs, forming all or the major part of teaching, were a very small minority of programs (2.5 per cent of total). Even with the most generous interpretation, there are very few such programs.

In summary, the language programs observed and analyzed are often in some sense "developmental", i.e. tend to be varied in content, to rely on a variety of materials, and on an open language approach (or a mixture of skills and attainments) rather than on explicitly defined goals and sequences in language acquisition.

A significant proportion of programs can be described as "structured" in some sense, but a large majority of these really are based, in part or wholly, on the Peabody language material. If the definition of this program were to be changed, the proportion of "structured" programs would alter drastically.

Programmed and direct instruction is found instead of, or side by side with, more open and unstructured teaching situations and materials, e.g. high usage of reading series and workbooks together with puppets, art work, learning games and conversation.

One of the most interesting classrooms observed, in a day school providing for severely language handicapped, combined a very stimulating and varied "developmental" approach (using the environment and situations relevant to children) with teaching in a precisely defined set of tasks using a high proportion of direct individual and group instruction.

In general, there appears to be a considerable mixture of content, techniques, and materials, but not, as a rule, explicit definition and application of goals, content and sequence derived from knowledge of language development and structure. As will be seen from previous discussion and later evidence, classrooms contain a large amount of conventional teaching material based on subject content such as reading, spelling and math. Materials such as are found in the regular classroom: books, readers, dittoes, workbooks, and other programmed printed materials are used to a significant degree as well as art, puppets, gym, toys and puzzles and environmental stimuli. The "language" class, in other words, has much in common with the conventional special class (opportunity, remedial, specific learning disability).

There may be as much emphasis on academic skills involving print (even in a special day school for language disordered children, especially at the older age levels of the elementary range) as there is on oral communication.

One extreme example is the following: children were observed throughout a half-day session working on their own on printed workbooks and going to the teacher, on occasion, to have their work checked. Such a program may, or may not, teach a child written language, but it certainly does not help him to communicate.

18.14.3 Differences in pattern between programs

Emphases found in different types of facility:

The developmental (environmental) approach is found particularly in Regional Centre (83.3 per cent); Autistic (83.3 per cent) and Pre-school (96.2 per cent) as well as in the Developmental Centre (100 per cent). This approach is an element in many programs, but is lowest in the Residential Provincial (50 per cent) and the Regular (elementary school) program (50 per cent).

The use of developmental criteria for entry to the program appears to be highest in Hospital (100 per cent); Other Residential (100 per cent); Pre-school (96.2 per cent); and also in the Autistic program (66.7 per cent). As expected, it is high in the Developmental Centres (70 per cent). The lowest priority for this approach is in the Residential Provincial programs with a more structured language approach (10 per cent).

In many respects, the use of developmental criteria for sequencing instruction is perceived by respondents as being identical with choice of developmental criteria for entry to program. Distributions are much the same for both these dimensions throughout the various types of facility. However, developmental stages of language appear to be used more as a guide to content and sequence of language material in the Autistic (83.3 per cent) and Other Residential programs (100 per cent). It is unexpected to find the autistic programs so strongly developmental.

Consideration of the child's developmental stage for starting a program is valid for all children. Consideration of the developmental stages of language acquisition is also probably appropriate but to a lesser degree for the autistic. Use of an environmental or natural approach to language learning is frequently inappropriate to the needs of the autistic child.

Structured linguistic approaches are most prominent in the Regional Centre (100 per cent) reflecting use of programs such as Distar, behavior management techniques, and the development of programs by consultant speech pathologists. It is also prominent in the Residential Provincial program (70 per cent) mainly, though not entirely, because of the use of the highly structured and programmed Association Method to teach aphasic classes. The high proportion of "structured" approaches in the Pre-school programs (50 per cent) may reflect the popularity of the Peabody language materials. Structured approaches are low in Other Language (15.4 per cent) but quite high in the Regular programs (43.4 per cent) again probably reflecting commitment to a particular kind of material rather than specific organization of goals, content, and linguistic sequence of language acquisition.

Programmed/prescriptive approaches are found mainly in Regional Centre (83.3 per cent) and Residential Provincial (60 per cent) for the reasons given above. Similarly, the Autistic program (83.3 per cent) has a strong bias toward programmed/prescriptive approaches reflecting the need to organize teaching stimuli and instructional techniques very explicitly for autistic children, or to use behavior modification techniques. Pre-school (3.8 per cent) and Hospital (20 per cent) are low, as in the Developmental Centre program (20 per cent). However, a high proportion of the Regular (elementary school) programs (59.2 per cent) are described as prescriptive in the sense of emphasizing direct instruction, use of workbooks and reading series and "drill" approaches.

It will be recalled that a high proportion of other classes, or even the same classes, are also classified as "developmental" in approach. Putting these two facts together illustrates the variety and lack of uniformity in present programs for language handicapped children in the regular schools.

Linguistic approaches are confined mainly to the Residential Provincial program (60 per cent), i.e. mainly a specific language program.

The semantic category is chiefly identified with Bliss Symbol programs, e.g. is found in 60 per cent of the Hospital category as expected.

Syntax approaches are confined mainly to the Regional Centre (50 per cent), i.e. programs which use material, such as Distar, with some linguistic syntactic structure, or programs devised by a speech pathologist.

18.14.4 Analysis by class-type

It was possible to analyze these data by class type as well as by school type.

This analysis shows that the Regular, Special Education, Opportunity, Remedial, and Specific Learning Disability classes have higher ratings for programmed/prescriptive approaches than do others (54.2, 80, 66.7, 60, 83.3 respectively).

Classes for aphasic children are high on structured approaches, (75 per cent), as are autistic (60.9 per cent), "language" (60 per cent), remedial (60 per cent) classes, purely residential placements (69.2 per cent) and 1:1 tutoring groups (60 per cent).

18.15 Alternative Symbol Systems

When children have difficulty acquiring language involving the phonology and structures of spoken language, the use of alternative symbol systems presents important possibilities. Such substitutes for spoken language may be used side by side with the presentation of spoken language to the child (as in "total communication"). They may be used as a vehicle for establishing communication, allowing the child to understand what is meant by a language system. This can lead in turn to more effective final acquisition of spoken language (as in the John Horniman School (U.K.) program for severely handicapped aphasic children).

Alternative symbol/language systems have been discussed in the Introduction and in the Advisement to the Ministry of Education. See also Schiefelbusch and Lloyd (1974); Lloyd (1976); Kent (1972); and the Santa Barbara Autism Dissemination Project (1976).

These alternative symbol systems, e.g. various ideolects or dialects of sign language and graphic symbol languages (such as Bliss Symbol) are now seen as genuine language systems with their own concepts and grammatical structure. (Lloyd (1976); Moores (1974))

Non-verbal means of communication -- such as finger-spelling and use of "Visual English" signs together with oral teaching, are now permitted in certain circumstances as part of the official language teaching policy for some severely hearing handicapped students in the provincial schools of Ontario.

There has been considerable interest and development since 1971 in the adaptation of symbol systems such as the Bliss Symbols (see Blissymbolics Foundation Newsletter). These are ideographic visual symbols, each standing for a concept. They were used first with cerebral palsied children who cannot articulate spoken language, gesture, or write, but who have acquired symbolic and inner-language functioning. This method has been extended to autistic and mentally retarded groups, in Ontario and the U.S.A. (e.g. Wayne County system, Michigan).

Sign language is now being used experimentally with autistic children who have failed to cope with the linguistic and phonological complexities of spoken language, and with mentally retarded groups, either as a substitute for spoken language or within a context of "total communication", e.g. Clarke Institute of Psychiatry program; McCordic School (Toronto); Kerry's Place (Clarksburg), etc.

Some of the most innovative programs in communication in the U.S.A. and the U.K. involve the use of alternative language systems or combinations of various symbol systems.

Only 91 respondents answered the question on alternative symbol systems. Of these, 44 (48.4 per cent) recorded the use of an organized sign language, such as American Sign Language, Visible English, etc. This is a substantial proportion of all language programs.

Bliss Symbols are also known to, or used by, a significant number of respondents - 29 or 31.9 per cent.

Teachers who do not learn or use systematic sign language rely on the use of meaningful gesture to the extent of 22 (24.2 per cent of cases).

Finger spelling (8.8 per cent) is much less used. It is confined chiefly, though not entirely, to teachers of the hearing-handicapped in the provincial schools for the hearing-impaired.

"Total communication", i.e. various combinations of different symbol systems with language,is found in only 5.8 per cent of cases. It is normally taken to mean the combination of sign language and speech as a prior means of communication. Nevertheless, it is a significant development in some facilities for the autistic, e.g. a class in the McHugh School for the autistic (Ottawa); Kerry's Place (Clarksburg) program for adolescent autistics and McCordic School, Toronto. It is also being used with autistics in special programs, e.g. the Clarke Institute program (Toronto) and with the mentally retarded.

There are unusual symbol systems of a highly concrete nature, such as the NonSLIP program (Carrier (1976)) based on concepts derived, in part, from communication with chimpanzees (Premack 1976). These are plastic symbols of various shapes and colours which teach learners to discriminate and to associate meanings (pictures) through operant conditioning. It teaches discrimination of sequences, and the association of the correct class of symbol with its place in a particular sentence order, by using colour cues. That is, as with the Bliss Symbols, the learner acquires the capacity to put together the symbols to make "statements". The NonSLIP program has interesting possibilities for non-verbal low-functioning children. It is very little used at present -- only 4 (4.4 per cent) -- of respondents. This percentage represents the experimental use of the materials in the Thistletown Regional Centre. It has recently been replaced there (1976) by experiments in acquiring responses to printed symbols (letters) which are believed to be no more difficult to learn but to lead more directly to use of conventional written language.

18.15.1 Patterns of usage in different programs

This is the distribution of alternative symbol systems:

Sign language is used mainly in Residential Provincial programs (77.8 per cent), as expected, since these are schools for the hearing handicapped. It is used also in Other Language facilities (100 per cent); Other Residential (100 per cent of respondents) and Autistic classes/schools (50 per cent). The Hospital program reports 40 per cent response, i.e. this probably represents the contribution to this category of the Clarke Institute program in total communication for autistic children. There is also an unexpectedly high proportion of response in the Trainable Retarded program (75 per cent). There is very restricted use of sign language in the Regular (elementary) programs where conventional language/academic programs are the norm (18.2 per cent), and Regional Centre (20 per cent).

Bliss Symbols are associated mainly with the Hospital category (60 per cent), i.e. the Ontario Crippled Children's Centre, Toronto, but are also used by individual learners or in programs in the mental retardation facilities. The Developmental Centres endorse usage 100 per cent and Mental Retardation programs 80 per cent, for some learners, and Trainable Retarded 33.3 per cent. There is an unexpectedly high percentage in the Regular program (13.8 per cent) but this probably reflects use of symbols in units for severely handicapped children attached to, or associated with, regular elementary schools, such as the Chedoke class of cerebral palsied children associated with the Hamilton Board of Education (of which a short video-tape record was made by the research team).

Use of gesture is limited to the Regular programs (63.6 per cent) and Pre-school (60 per cent), i.e. those programs which do not use organized sign language. It is also used in the Regional Centre programs (40 per cent).

Finger spelling, as anticipated, is mainly limited to the Residential Provincial school program (33.3 per cent).

"Total communication" appears to be confined to the Autistic (100 per cent), Hospital (20 per cent) and some retarded groups, despite the reservations about the difficulties which may be encountered by autistic children (because of selective stimulus processing) in dealing with a multi-sensory task (see Koegel (1973)).

18.16 Do schools have preferred programs?

Teachers were asked if they had preferred programs or important parts of programs, i.e. to see if they tended to use some programs exclusively, or assume that one program was beneficial to a wide variety of children.

A majority of respondents - 129 (56.8 per cent) - acknowledged preference for all or part of a program, whereas 67 (29.5 per cent) explicitly do not have such preference.

The ratio of preferred to non-preferred choices appears particularly high for Regional Centre and Autistic (100 per cent preferred). It is low for Residential Provincial (36.4 per cent) and Other Language (33.3 per cent). The programs with high prefer/non prefer ratios are obviously those which use to a considerable extent one or more particular programs, e.g. Distar, systematic use of Peabody materials or other behavior modification approaches. The Regular schools had 58.1 per cent preferred programs.

Preference, however, does not mean exclusive or major use of that program alone.

18.17 The program materials

Records of teaching materials and associated teaching techniques were gathered from interviews and by detailed observation of the classroom -- what it contained and how materials appeared to be organized and used.

It seems clear that a major portion of materials in classes for language handicapped include programmed reading materials (40.2 per cent), workbooks (46.9 per cent), reading series (61.9 per cent), math (39.2 per cent) or spelling series (28.9 per cent). This indicates that a major emphasis in language teaching programs is on written language.

The Peabody language materials are the one major published program most widely used (117, or 60.3 per cent). It can be viewed as developmental or partly structured.

Its attractiveness to teachers may be in the variety of materials it presents in an organized and packaged way. Schools may not use the whole program but are likely to select from it. It should not be assumed that frequent mention of the use of Peabody materials means that all the classrooms using it adopt it completely.

Developmental Learning Materials -- a series of materials involving children in a variety of activities (perceptual/motor and auditory), originally designed for young children -- appears to be popular, mentioned by 75 (38.7 per cent of respondents). Again, it is unlikely that the whole set of materials is used by any one program.

The Distar language and reading programs, highly prescriptive and, to some degree, structured linguistically, are used regularly by only 36 (18.6 per cent of programs).

The Reynell program (a pre-school program reconciling a developmental approach through activity and play), and choice of materials by teachers (with a linguistic plan of progress) accounts for only 10 (5.2 per cent of respondents). They are mainly in one or more special pre-school language programs such as the Chedoke Hospital pre-school unit.

The highly structured and programmed Association Method (McGinnis) (10, 5.2 per cent of respondents) is restricted to the aphasic classes at the Sir James Whitney school for the hearing handicapped, in Belleville.

Only Southshore School (Sudbury) associated with the Algoma Sanitorium and Sudbury Board of Education, mentioned the Laura Lee (1975) interactive language (developmental/structured) approach.

There appears to be little general knowledge, or use, in the educational system of the variety of well-established language teaching programs such as have been developed in the past 5 to 10 years (Fristoe (1976); Lloyd (1976)). There is restricted variety of formal language teaching programs, or evidence of experimentation with these.

By contrast, reading series are mentioned as important by 61.9 per cent of respondents. Workbooks are listed by 46.9 per cent. Math series are listed by 39.2 per cent and spelling series by 28.9 per cent.

Specific programmed or structured reading materials normally used in regular classrooms, or for remedial teaching, are also mentioned by a significant number: the S.R.A. programmed materials (21.1 per cent); phonovisual reading materials (20.1 per cent); and Stott Programmed Reading (19.1 per cent). It is strange to find programs which are mainly visual, or visual/phonic, in nature (with very little general language stimulation and no oral language experience built into them) being so widely used with children with significant or severe spoken language problems.

Similarly, it is interesting to find that the Frostig visual-perceptual training materials are used by 10.8 per cent of language classes. It is possible they are being used with aphasic children who have significant perceptual-motor difficulties. (See unpublished research study indicating high levels of perceptual-motor handicap among aphasics in Belleville). (Roberts (1977) in bibliography)

This analysis of the frequency of usage of specific learning materials used in programs for language handicapped children confirms that content and approaches, in many classrooms, cover much of the range of elementary school basic curriculum, and that the content and organization of the "language" program (particularly in the Regular program) may closely resemble, in its academic bias, the conventional elementary/special education classroom.

18.17.1 Patterns in the different programs

Throughout the various facilities: Reading series are frequently found in Regular (elementary) programs (84.6 per cent); Residential Provincial (68.4 per cent); and in Autistic programs (66.7 per cent). The lowest occurrence is in Regional Centre (0); Other Residential (0); and Pre-school (4.5 per cent) which have been observed previously to share the same cluster of responses, i.e. having specific behavioral and language programs for young and severely language- or behaviorally-handicapped children.

There are lower percentages for use of workbook series and math and spelling series than for readers, but the pattern is similar. Spelling series are frequently found in the Regular programs (50 per cent) and, surprisingly, in Autistic programs (66.7 per cent).

Among specific "programmed" materials, the S.R.A. reading materials (which rely on sequenced self-checking materials) are most used by Regular (34.6 per cent) and Autistic (33.3 per cent) programs but also, to some extent, by Regional Centres (25 per cent) and Residential Provincial (21.1 per cent).

The phonovisual materials are mainly used by the Autistic (83.3 per cent); Hospital (40 per cent) and Regular (30.8 per cent) programs. These materials link letter symbols with consistent similarities in auditory and articulatory characteristics, e.g. p/b, the unvoiced and voiced forms of a similar sound.

The Autistic (50 per cent) and Hospital (40 per cent) also make relatively high use of the Stott reading materials, which are essentially visual-phonic, and in which games/activity and self-checking aspects, requiring a fairly high level of attention and self-motivation, are important.

It might be noted that, in using many of these reading materials and, in particular, the self-checking programs, the child may have little opportunity to use receptive oral language or expressive language, or to interact at any length through language with the teacher or other children.

The Peabody language materials are used most by Regional Centre (100 per cent); Pre-school (90.9 per cent); Autistic (83.3 per cent) and Hospital (80 per cent) as well as by mental retardation facilities. It was used by a majority (56.4 per cent) of Regular programs.

Distar programs are used mainly in the Regional Centre (100 per cent) and Autistic (66.7 per cent) programs. In the Regular programs, 19.2 per cent make use of Distar material.

Behavior modification techniques are most used in Regional Centre (100 per cent); Autistic (83.3 per cent) and Hospital (40 per cent) programs, i.e. the autistic/behaviorally-disturbed. It is also interesting to find that 40 per cent of Pre-school programs report using behavior management techniques, presumably to cope with behaviorally-disturbed children. The Regular program makes little use of these techniques (9 per cent) as does the Residential Provincial (0) program.

The Association Method for teaching language to aphasics is used by 36.8 per cent of the Residential Provincial schools programs, i.e. is identified with the sample of the aphasic classes in Belleville.

The Reynell program appears not only to be used in a special Pre-school language program (18.2 per cent) but in a Regional Centre program (100 per cent).

NonSLIP is used experimentally in Thistletown Regional Centre program (100 per cent) but seems to have been tried by a very small proportion of other programs.

18.18 Non-commercial materials for assisting learning

There is a wide variety of developmental, creative, and structured materials in many classrooms.

Art materials and stimuli rank first (84.3 per cent) followed by puzzles (82 per cent) and pictures (79.3 per cent).

Books (non-text) come next, endorsed by 67.3 per cent of programs.

Manipulative materials such as pegboards and construction toys follow at 64.5 per cent.

Use of the blackboard as an aid is mentioned by 76.5 per cent of programs, as well as flash cards (55.3 per cent) and flannel-graph displays (50.2 per cent).

Pre-school/kindergarten activities, involving symbolic and manipulative play, are also used: dress-up/drama 42 per cent; sand/water activities 31.3 per cent; and climbing apparatus 25.8 per cent.

Music appears to play a relatively minor part in most programs, to judge from the 23 per cent response on use of piano in the classroom. The Regular program is 13.1 per cent.

The occurrence of this range of materials, which suggests that provision is being made for younger and developmentally less mature children, suggests that many language classrooms resemble regular or elementary special education classrooms in the range of developmental learning materials and opportunities they offer.

Comparing the various types of program --

Art is recorded as important by most programs. Lowest proportions of recording are in Other Language (78 per cent) and Residential Provincial (75 per cent) programs.

Sensori-motor material such as puzzles are recorded lowest in Other Residential (0 per cent) and Residential Provincial program (55 per cent). The Regular program is 79.8 per cent.

Pictures are least used in Other Residential (0); and Residential Provincial (65 per cent). The relatively low response for pictures in Developmental Centres (60 per cent) may reflect the limited ability of severely handicapped children (autistic or mentally retarded) to interpret and use representational (pictorial) material which is appropriate to normal children of the same age or younger. See comments on the representational stage of learning (Eisenson (1972)) and comments by Santa Barbara Autism Project (1975) as well as observations on the programs of the Harborough School (London, U.K.). (1976) The Regular program is 84.5 per cent.

The use of "non-text" books is generally high, but lowest in Residential Provincial (25 per cent) and Other Language (57.1 per cent). The Regular program is 65.5 per cent.

Manipulative/exploratory puzzles are least used by Other Residential (0); Residential Provincial (25 per cent) programs, the same pattern as for pictures and other developmental material. The Regular program is 65.5 per cent.

Dressing up/drama is least used by Residential Provincial (25 per cent); Other Language (28.6 per cent); and Autistic (33.3 per cent). Lower frequencies are also found in the mental retardation groups: Developmental Centre (30 per cent); Trainable Retarded (38.5 per cent). The Regular program is 39.3 per cent.

Taken together, these facts suggest that symbolic play and drama may be inappropriate and unrewarding for low functioning groups with limited capacity for symbolic play and representation. (See Introduction: chapter on autism). In the Residential Provincial program, the low frequency for symbolic play may reflect the occurrence of older children and emphasis on more formal classroom language programs, in the group studied.

The same groups which use the blackboard, e.g. Residential Provincial (90 per cent) also tend to use flash cards (35 per cent) and flannelgraphs (30 per cent). Almost all groups use most media for display and demonstration. The Regular program uses 41.7 to 88.1 per cent.

Sand and water play are used in the Regular (elementary) program (21.6 per cent); Pre-school (92 per cent) as expected, but also in Regional Centre (100 per cent); Hospital (80 per cent) and Autistic groups (66.7 per cent). They are low for Residential Provincial (0), Other Residential (0) and Other Language programs (14.3 per cent). This kind of activity seems more appropriate for the younger and more severely handicapped child. A similar pattern holds for the provision of climbing equipment.

18.19 The use of commercial aids, games, and activities

Language programs make use of commercially produced activities and games for learning and practice. An important part of classroom materials are number (74.2 per cent) and word (71.1 per cent) games.

Games/activities cover basic processes such as: (a) classification (66.7 per cent), (b) matching (64.8 per cent) and sorting (56 per cent).

The content of such activities cover: phonics (63.5 per cent); visual memory (61 per cent); and "perceptual" activities (52.9 per cent).

Adaptive and self-help materials, e.g. lacing/button frames or dressing dolls, comprise a lower proportion (43.4 per cent) of these materials. This is of interest, in view of the considerable emphasis placed, in the goals of both principal and teacher, on adaptive and social skills. Least use is by Residential Provincial (0) and Regular (20.6 per cent) programs.

There appears to be a considerable variety of materials related to non-oral language and general learning of skills in many programs, e.g. classifying, sequencing, discriminating, manipulating.

The pattern of usage is similar for number, word and phonic games. The lowest usage for number, word and card games is by the Residential Provincial program (range: 16.7 to 50 per cent) with little or no use of the other activities such as classifying, matching, visual memory, etc.

Autistic, Hospital, and Regional Centre, Pre-school programs make considerable use of such aids and games (100 to 80 per cent). The Regular programs also use them to the extent of 76 to 50 per cent.

18.20 Teacher-made materials and aids

When the teacher has the time and opportunity to make teaching materials, these reflect the real aims and the techniques of the program more clearly than do purchased materials.

The most-used teacher-made aids are concrete objects or displays (79.1 per cent); print/pictorial materials (73.5 per cent); flash cards (72 per cent); experience charts (69.7 per cent) and calendar. The prominence of these materials reinforces the impression of classrooms which make use of environmental/developmental learning.

However, structured/practice material such as number concept cards (62.1 per cent); dittoes and work sheets (56.9 per cent) are also used to a significant extent in the same classrooms. As in conventional special education or elementary classrooms, language games (53.1 per cent) and math games (49.8 per cent) are important in the teaching program.

Stories are used in teaching by 43.1 per cent of respondents, but listening activities have an unexpectedly low occurrence of 27 per cent.

Once again, the picture this gives is of a program devised for younger, less mature children but, nevertheless, with a quite marked "print" and academic bias, as compared with overtly oral and listening materials.

Some patterns for the material basis of programs in different facilities are by now familiar.

18.20.1 Patterns for different programs

There is least use of concrete objects by the Residential Provincial program (54.5 per cent); this is also true for the use of pictures (31.8 per cent) and flash cards (18.2 per cent).

Experience charts are not used extensively by Other Language (33.3 per cent) and Residential Provincial programs (31.4 per cent), and are surprisingly low for the Developmental Centre (44.4 per cent) until one recalls the cognitive limitations of children in these centres/facilities. The Regular programs use them to the extent of 86.4 per cent.

Number concept cards have a high frequency of use by all groups but only 50 per cent by Residential Provincial programs.

Dittoes and work sheets are least used by Regional Centre (0); Preschool (9.1 per cent); Autistic (16.7 per cent) but are used to a surprisingly high degree by mental retardation groups. (Developmental Centres 66.7 per cent; Trainable Retarded 53.8 per cent and Mental Retardation 88.9 per cent).

Language games are little used in the Residential Provincial program (4.5 per cent), Other Residential (0) and Developmental Centres (0). The Regular program uses them to the extent of 57.3 per cent.

Stories are least used in the Residential Provincial program (9.1 per cent) and Other Language (25 per cent). Use is also low in Developmental Centre (22.2 per cent). The Regular program has 42.7 per cent.

Use of listening activities is found mainly in the Regular (50 per cent); Hospital (40 per cent); and to lesser degree the Autistic programs 33.3 per cent). The findings raise issues about the beliefs and practices regarding the relationship of receptive and expressive language, of auditory training or preparation for listening, and the relationship between comprehension and production.

Why is there apparently so little organized auditory learning?

18.21 Special Learning Centres in the Classroom

The skilled teacher, outside the direct instructional situation, will organize centres for activities and independent or controlled learning. These may take the form of learning centres or resource areas, where specific kinds of activity can be focussed and stimulated, e.g. listening, reading, art, exploration/science, drama, etc.

As expected, centres for language stimulation account for 63 per cent of centres organized for stimulating learning. The importance attached to art-expressive experiences and media is shown by the occurrence of 55.2 per cent of art centres in classrooms. The by now well-established academic/print emphasis of language programs is confirmed by the 45.5 per cent of reading/writing centres.

By contrast, the needs of young, immature, and handicapped children for the alternative forms of expression found in drama, and the possibility of using this to stimulate language, is reflected by the 44.2 per cent of "domestic play" centres. "Other" special centres, e.g. science, nature, building, games, etc. account for 33.9 per cent of responses.

As noted, music appears to be a minor interest or vehicle of learning with a low response of 17 per cent. Craft and shop work are not perceived as part of the general commitment of the language classroom, and special craft centres represent only 9.7 per cent of responses.

18.21.1 Patterns of different programs

In comparing the various types of facility:

Language stimulation centres are frequent in Autistic (100 per cent); Regional Centre (100 per cent); Hospital (80 per cent); Pre-school (78 per cent) programs, i.e. those with the autistic and behaviorally handicapped learning groups. The lowest responses were in Residential Provincial (11.1 per cent) and Other Residential (0). The Regular program has 64.8 per cent. This contrast in patterns of facility emerged previously in comparing program emphases and kinds of material.

Art centres follow the same pattern, i.e. language and art centres tend to be found in the same classrooms. The Regular program had 52.1 per cent. The Residential Provincial program had 11.1 per cent.

Reading/writing centres: least in Pre-school (4.2 per cent); Hospital (40 per cent); Regional Centre (40 per cent); i.e. those with the least academic emphasis, but relatively more such centres were reported by Residential Provincial programs (44.4 per cent). The Regular program reported 62 per cent and the Autistic programs 66.7 per cent. (By contrast, the Trainable Retarded was 0 per cent and Mental Retardation 18.2 per cent.)

Domestic play centres are obviously more frequent for Pre-school (95.5 per cent) but also for Hospital and Regional Centre programs (100 per cent each) and for Autistic programs (83.3 per cent) but low for Residential Provincial (11.1 per cent). The Regular program has 25.4 per cent. This follows a pattern familiar from previous analyses of program preferences and materials.

Provision for music centres is found in the Pre-school (62.5 per cent); Regional Centre (40 per cent) and to some extent in the Autistic programs (33.3 per cent). It is, however, low in the Regular programs (5.6 per cent), which provide for a large number of the language-handicapped children in special education, and in the Residential Provincial programs (0 per cent).

There is no direct evidence here on the efficacy of music as an adjunct to or vehicle for language learning, but where music education is developed, e.g. Child Study Centre, University of Ottawa (part of the Other Language category) it appears from observation to make a contribution to the cognitive and emotional learning of handicapped children. Both conventional music and Carl Orff approaches would offer much to develop the sense of rhythm in both musical and verbal patterns.

Craft centres are restricted to the Other Residential program (100 per cent) which is an individualized pre-vocational program for handicapped adolescents (Kerry's Place) in which farm, gardening, self-help crafts and practical activities are an integral part of total learning and vehicles for communication.

18.22 Other areas/centres of learning outside the classroom

Experiences and activities outside the classroom give variety and breadth of learning. This is especially true of language learning where skills need to be applied and generalized outside the classroom.

As reported by the teacher (Schedule 4), in 86.9 per cent of instances the non-academic areas of learning are organized within the classroom. This emphasizes the self-sufficiency, if not the isolation, of many programs.

However, in 58.1 per cent of cases, children went out to shop/practical work which would help to explain the fact that craft centres are not found in these classrooms. Field trips as a component of the program was reported by 56.1 per cent. Unspecified experience outside school (probably shopping, nature study, less organized trips into the locality) have a similar pattern, with a response rate of 55 per cent.

Gym and swim programs are important, with a response rate of 53 per cent.

Art is not usually done outside the classroom (7.6 per cent only); but many classrooms have an art centre.

Work experience is not usually a part of the program for the language handicapped (7.1 per cent of responses).

18.22.1 Patterns in different programs

Among the varying types of facility:

"Shop" work was found least often in Regional Centres (25 per cent) which normally accept younger children. The Pre-school note 58.3 per cent of "shop" work but this, presumably, is simply practical activities outside the home classroom. The Regular program notes 43.1 per cent, but the one example of a senior elementary school has no entry.

Field trips, high for Regional Centre (100 per cent) are least frequent for Residential Provincial (33.3 per cent); Other Language (20 per cent) and Other Residential (0). The Regular program has 48.6 per cent, around the average. "Other activities" outside the classroom display a similar pattern, but rate lower for Hospital (25 per cent); Pre-school (4.2 per cent) and Autistic (0). Also for mental retardation programs (0 to 12 per cent). The Regular program records 26.4 per cent "other" outside activities.

Gym and swim programs are least frequent for Other Residential (0); Hospital (50 per cent); Residential Provincial (50 per cent) but also lower for Autistics (50 per cent) than were other external activities. Regular programs have 47.2 per cent, about average.

Art activities outside the classroom were found mainly in the Other Language programs (26.7 per cent) and very little in Regular programs (8.3 per cent).

Work experience is mainly limited to Autistic (33.3 per cent). The Regular program reports 4 cases (5.6 per cent).

18.23 Teaching techniques and audio-visual aids

The program does not depend on the kinds of teaching aids available or used, but these aids do facilitate particular forms of learning and make teaching easier and more effective. The kinds and variety of audio-visual aids found in a classroom also indirectly indicate the kind of support and the resources given to the program.

Gramophone records are available to the majority of programs (86.3 per cent). Slides and film strips are frequently available (83.4 per cent). Audio-visual tapes and tape recorders are also found (73 per cent) though it is strange that there is a lower percentage of this kind of aid, directly related to speaking and listening skills, and to a variety of diagnostic possibilities in the classroom, than there is of visual material. Few programs have a specific audio-visual component. The Language Master, a valuable aid in relating visual and auditory information in listening and reading, is found in 34.1 per cent of classrooms. It will be recalled that listening centres and activities were not among the most frequently reported in language programs.

Television and videotape are reported by a relatively high proportion of programs (32.7 per cent). Apart from the stimulus value of television programs, videotape has a crucial contribution to make in programs for the language-handicapped, especially the autistic, i.e. in bringing real visual material from the environment, monitoring children's responses, providing recordings of children's behavior and playing back these recordings to help children perceive their own behavior.

The overhead projector is a useful adjunct (30.3 per cent) to blackboard and flannel-graph; use of this aid underlines the fact that in many classrooms for language handicapped, there is direct teaching and demonstration of a kind found in conventional classrooms.

By contrast with the above, only a minority of programs use amplifying equipment or special listening aids (17.1 per cent). The "electronic ear", used at the Centre for Child Study, University of Ottawa, is a striking exception to this generalization.

Teaching machines and talking books are used by only 15.2 per cent of programs. In view of the high frequency of usage of other kinds of programmed material, workbooks and duplicates, such aids should find a wider application in these classrooms (e.g. Gray and Fygetakis' (1961, 1968) work on behavioral management and programmed sequences in teaching syntax to severely language-handicapped children).

18.23.1 *Patterns of different programs*

Among the various types of facilities; *gramophone records*, frequent for most programs, are found less frequently in Residential Provincial (42.9 per cent) and Other Residential programs (0).

Slides and film strip are also used frequently but are relatively less used by Other Language (41.7 per cent) and Other Residential (50 per cent) programs. *Audiotape* is used quite frequently, but is least used by Residential Provincial programs (38.1 per cent); Other Language (58.3 per cent); and Other Residential programs (50 per cent).

The above groupings of programs have occurred often in the analyses of program emphases and materials.

The Language Master is *most* used by Residential Provincial (66.7 per cent); Other Residential (50 per cent); Autistic (33.3 per cent) programs. The Regular program also has fairly frequent usage (38.6 per cent) but there is little use by other facilities.

Television and videotapes are little used by Residential Provincial (19 per cent); Other Language (16.7 per cent); Other Residential (0). This finding is a little strange, in view of the excellent resource centre and television facilities found in provincial schools, and the value of videotape, as suggested above, in providing stimulus for and recording of the behavior of autistic children. The Regular program reports 28.9 per cent use.

Use of television/videotape is relatively high for Regional Centre (83.3 per cent); Autistic (66.7 per cent) as would be hoped, and is also frequently used by the Hospital program (66.7 per cent).

The *overhead projector* is much used by the Residential Provincial program (81 per cent) and Regular (elementary) program (39.8 per cent), i.e. by those programs which are likely to be the most structured in teaching approach, and little by other programs.

Teaching machines and talking books are used mainly by the Autistic program (50 per cent) and a scattering of programs in Regular, Regional Centre, and Pre-school settings, about 20 per cent each.

Once again, the examination of techniques and aids has cast a revealing light on the teaching approaches preferred by various programs. 211 valid responses (92.9 per cent) were the basis of this analysis.

18.24 Specific Techniques in Stimulating and Directing Learning

18.24.1 Stimulation and direction of play was found in about half the programs. Play was encouraged by providing stimulating materials and toys in 33.3 per cent of programs; by the teacher providing motivation and re-inforcement in 23.3 per cent of programs. Having other children act as models for this behavior is much less important (8.7 per cent).

Providing stimulating materials is found most frequently in the Regional Centre program (100 per cent); Pre-school (53.8 per cent); and Autistic (50 per cent); and least for the Other Language (13.3 per cent); Residential Provincial (9.1 per cent) and Other Residential programs (0). The Regular program records 28 per cent.

Providing motivation and re-inforcement is most frequent in the Regional Centre (100 per cent); Autistic (50 per cent); Pre-school (34.6 per cent). It was least frequent for the Residential Provincial (4.5 per cent); Other Language (6.7 per cent); Other Residential (0). The Regular program was 22 per cent.

Having other children model the behavior is found only in Pre-school programs (11.5 per cent) also in mental retardation programs: Developmental Centre (20 per cent); Mental Retardation (16.7 per cent); Trainable Retarded (7.7 per cent). The Regular program is 9.8 per cent. This is based on 219 (96.5 per cent) valid responses.

18.24.2 Control and direction of attention

This is an important aspect of learning and is a crucial stage in behavioral management and several language programs (see Santa Barbara Autism Project (1976) and Kent (1972) programs, for example).

Attention is managed mainly by verbal cues (80 per cent) and by physical prompts (59.2 per cent) i.e. pointing, holding or manipulating child, placing materials in prominent situations to attract attention. Commands, with isolation for non-compliance, (i.e. "time out" procedures) are found in 30 per cent of programs. Gesture prompts account for 27.5 per cent of programs.

Specific programmed techniques, in steps, are rarely used (8.3 per cent).

Least use of physical prompts is by Hospital (33.3 per cent) and Other Language (42.9 per cent). Regular program is 48.9 per cent.

Least use of command and isolation is by Other Residential (0); Other Language (0); Residential Provincial (0); and Hospital (33.3 per cent), also by Developmental Centre (0). Regular program is 22.2 per cent.

Use of gesture is low in Autistic programs (0) as expected in a group which has poor capacity to copy imitative gestures. It is also low in Other Language and in Hospital (0 each) and Regional Centre (33.3 per cent); also Developmental Centre (25 per cent).

The Regular program reports 35.6 per cent.

Specific programmed techniques are limited mainly to the Regional Centre (66.7 per cent) which makes consistent use of behavior modification. The Regular programs report only 4.4 per cent usage. The data are based on 120 (52.9 per cent) valid cases.

18.24.3 Stimulation and direction of gesture response

The major technique for stimulating gesture is modelling by the child on the teacher (22.5 per cent). Aural/visual prompts e.g. showing a child how to blow out air to prepare for vocal gesture, accounts for only 11.5 per cent of programs. Repetition occurs in 10.5 per cent of cases as a learning technique. Primary re-inforcement, i.e. use of food, etc. as reward, is found in only 6.2 per cent of cases. It was noted earlier that the major means of motivation and re-inforcement in learning is use of teacher approval rather than more specific or primary forms of re-inforcement. Use of aids, such as mirrors, and specific exercises account for a minute proportion of practice (1.4 per cent each).

Aural/visual techniques are used mainly by the Regional Centre (100 per cent); Hospital (40 per cent) and Autistic (33.3 per cent) programs; Other Language (0 per cent); Residential Provincial (0 per cent); and Pre-school (7.7 per cent) are lowest. The Regular program is also 7.7 per cent.

Repetition (associated with operant-conditioning techniques) was frequently used in the Regional Centre (100 per cent) and also in the Pre-school programs (26.9 per cent) but otherwise had a low frequency. Regular program was 7.7 per cent.

Use of primary re-inforcers was associated with Regional Centre programs (66.7 per cent) and slightly with Autistic (16.7 per cent). The Regular program is 2.6 per cent.

18.24.4 Programs for the stimulation of vocalizing

The stimulation of vocalizing is an important stage of imitative behavior in many organized, structured language programs.

Over half the programs did not record information on this, i.e. did not need to employ this approach because children were already vocalizing, or were in control of vocal behavior, or because the technique was not perceived as relevant. Nevertheless, data are based on 212 (93.4 per cent) valid responses.

Among the responses available, modelling by the child on the teacher accounted for 25 per cent of programs. Repetition was found in 17.9 per cent of programs. The use of aural/visual prompts (viz. blowing air or making gestures with lips) is low (11.8 per cent) and the use of primary re-inforcement is lower still at 7.5 per cent. Use of specific aids (3.3 per cent) and of specific vocal exercises (2.4 per cent) is infrequent.

As in stimulating gesture, the Regional Centre (100 per cent) uses modelling by teacher as a main technique for teaching vocalizing. Modelling is not used by Hospital (0); Other Language (0); and is little used by Residential Provincial (4.5 per cent) and Autistics (16.7 per cent). The Regular program uses it in 26.6 per cent of cases.

Repetition is used to stimulate vocalizing as well as gesture by Regional Centre (100 per cent) but is little used by Hospital (0); Other Language (6.7 per cent); Autistic (16.7 per cent); Residential Provincial (13.6 per cent). The Regular program uses it relatively frequently (34.6 per cent).

Aural/visual aids are used exclusively by Regional Centre programs (100 per cent). Primary re-inforcement is also most used by Regional Centre (66.7 per cent) and Autistic (33.3 per cent). Specific exercises are also used mainly by the Regional Centre program (33.3 per cent). These last two are the individualized/behavior modification programs. These data are based on 212 (93.4 per cent) valid responses.

18.24.5 Programs for the stimulation of verbalizing (phonemes)

This is a further stage in an organized language program, i.e. producing organized speech sounds under control. The majority of program (56.9 per cent) do not need this stage or do not record it, though valid responses are 218 (96 per cent).

Modelling by child on teacher (27.1 per cent) was again the most important technique, followed by repetition (22 per cent). Other techniques were much less frequent: specific programmed techniques (9.6 per cent); primary re-inforcement (9.2 per cent); use of aural/visual prompts (7.8 per cent); use of special aids (6.4 per cent); and use of specific exercises (2.8 per cent).

For this stage of language learning, modelling by teacher was most used by Regional Centre programs (100 per cent) whereas, at the more basic stages their use of modelling was infrequent. It may be recalled that the children in these programs are very handicapped, with severe behavior disorder, or extreme forms of autism which require considerable ingenuity and patience in teaching.

Modelling was infrequent for Residential Provincial (4.5 per cent) and Other Language (6.7 per cent) but the Autistic program (33.3 per cent),not unexpectedly, used this technique for stimulating verbal response. The Regular program reported 27.2 per cent usage.

Repetition is also a preferred technique in the Regional Centre (100 per cent) and Autistic programs (33.3 per cent) but is low in all other programs except Pre-school (26.9 per cent) as well as the Developmental Centre (30 per cent). The Regular program reports 19.8 per cent.

Specific programming techniques are one stage of the structured language approach found in the Residential Provincial school program (31.8 per cent) but are not found elsewhere. The Regular program reports 11.1 per cent.

Primary re-inforcement is found mainly in the Regional Centre program (100 per cent) which was also the chief user of aural/visual techniques (66.7 per cent). Usage in the Regular program is low (2.5 per cent). Aids, and specific exercises for verbalizing, are not used by most programs; there is slight usage by Other Language and Pre-school programs.

18.24.6 Programs for stimulating vocabulary

About half the program did not respond, but data are based on 220 (96.9 per cent) valid responses.

Of the recorded responses, 28.6 per cent reported that the teaching/learning vocabulary was part of a specific program of language instruction. A smaller proportion (24.1 per cent) based vocabulary learning on experience and activity by the child, i.e. words are learned in the process of play, carrying out other tasks of learning, through environmental stimulation, conversation, etc.

Formal instruction through techniques such as use of flash cards and word-lists was used by 21.8 per cent of programs. Labelling and classifying objects was a technique used in 19.5 per cent of programs; this is an "experience" approach.

The total program had important developmental and prescriptive components; so has the teaching of vocabulary.

The teaching of vocabulary as part of a structured language program was most frequent in Regional Centre (100 per cent) and Autistic and Other Residential programs (50 per cent); but the acquisition of vocabulary through experience was also equally frequent in Regional Centre and Autistic programs. This appears to be a contradictory finding. The explanation is that vocabulary must be taught to autistic children in a structured way and consistently re-inforced; it must also consist of language which is relevant to the child and can be readily applied to satisfy needs in the environment. Kleffner (1973) emphasizes the need for language teaching to the language handicapped to be structured but relevant, and the Santa Barbara Autism Project teachers' handbook illustrates this technique clearly.

The Residential Provincial program also has a high frequency (31.8 per cent) of direct vocabulary teaching, probably within structured language programs. Other programs have a low frequency of response. The Regular program had 30.5 per cent.

The Pre-school programs make use of experience and activity (46.2 per cent) and classifying and labelling objects (38.5 per cent) to help children acquire vocabulary. The Hospital program had a high frequency of response (40 per cent) for experience and use of labelling. The Regular program had a low level of usage for these approaches (13.4 and 18.3 per cent).

The use of specific instructional aids such as flash cards and word-lists is found mainly in the Regular (34.1 per cent) and Autistic (33.3 per cent) programs.

18.24.7 Programs for teaching the patterning of words/linguistic structures

Slightly under half the programs did not respond, though total valid responses were 183 (80.6).

Among those responding, modelling by child on teacher was the most important technique (34.3 per cent) followed by repetition (27.9 per cent). Specific language programs are used for this purpose by only 23 per cent of responding programs. Primary re-inforcement is used by 14.2 per cent.

18.24.8 Grouping a child with children who are competent in language (i.e. use of discourse or conversation in stimulating production of sentences, etc.) is not a preferred technique (13.1 per cent).

As in teaching vocabulary, the Regional Centre is the most explicit in using modelling (100 per cent) repetition (100 per cent) and specific language programs (100 per cent), e.g. Distar and possibly Peabody materials.

The Autistic program also records high frequencies for these techniques (66.7 per cent for specific program, 100 per cent for modelling/repetition).

The Pre-school reports fairly high frequencies for modelling (52.6 per cent), repetition (47.4 per cent) and use of primary re-inforcement (36.8 per cent). The Regular program reports modelling (35.8 per cent), repetition (25.4 per cent) and specific program (20.9 per cent).

The Residential Provincial program is represented by a specific structured program (31.8 per cent).

The grouping of a child with more competent speakers is found in few cases, but is recorded by Autistics (33.3 per cent); Regular (19.4 per cent) and Pre-school (15.8 per cent) programs.

18.24.9 Programs for stimulation of speech interaction/discourse

This question relates to the last stages of acquisition and application of language, a crucial one in which, as Kleffner (1973) points out, the children must generalize and extend their language skills by using them for effective communication.

Specifically designated time and opportunity for discussion/conversation within the language program is the major technique for stimulating speech interaction (26.3 per cent). Stimulation of conversation by teachers providing interesting incidental material is insignificant (5.5 per cent). Specific questioning by teachers (4.6 per cent) is also infrequent. Grouping a child with more competent peers as models is not generally used (3.7 per cent), any more than it is used to stimulate vocabulary. The use of role play and drama is also infrequent (3.2 per cent).

The major teaching of discourse is therefore in structured conversational/discussion situations arranged by the teacher. The Regular program used it in 28.4 per cent of cases, the most preferred technique.

Designated time and opportunity for discourse was a preferred technique at the Regional Centre (66.7 per cent) and Hospital (40 per cent). These programs probably do not use more indirect approaches such as providing incidental materials to stimulate conversation, teacher's questions or grouping with peers. Such approaches are generally believed not to work well with the severely handicapped/retarded children found in these programs. There is, however, some use by the Regional Centre of role play (33.3 per cent).

Autistic (50 per cent), Pre-school (30.8 per cent), Residential Provincial (22.7 per cent) programs are more likely to employ "Other" approaches.

Use of incidental stimulating material is found mainly, but to a minor degree, in Pre-school programs (19.2 per cent) and Autistic (16.7 per cent).

217 (95.6 per cent) valid responses were recorded.

18.24.10 The Teaching of Social Responses

The learning of adjustment skills and social responses was a set of goals which received high priority.

Half the respondents, however, did not record an answer to this question, though 218 (95.6 per cent) valid responses were tabulated.

As expected, the teaching of social responses was chiefly by the child modelling on the teacher or the child's peers (31.7 per cent of those responding). Re-inforcement by praise or reward was used in 19.7 per cent of programs reporting, and the use of repetition was reported by 19.3 per cent. The expected pattern of differences between programs emerged:

The highest frequency of modelling was found in the Regional Centre (100 per cent); high proportions were also found in Autistic (50 per cent), Pre-school (42.3 per cent) and Hospital (40 per cent).

Frequency of modelling (the most preferred technique) in the Regular program was 32.9 per cent. The programs for mentally retarded were: Mentally Retarded (38.9 per cent), Trainable Retarded (36 per cent), Developmental Centre (30 per cent).

The highest proportion of re-inforcement was found in the Regional Centre (100 per cent); Autistic (50 per cent); and Hospital (40 per cent).

The Pre-school was 30.8 per cent. Lowest frequencies were in the Regular program (18.5 per cent) and Residential Provincial (0).

A high proportion of repetition was found in the Regional Centre (100 per cent); Autistic (50 per cent); and Hospital (40 per cent). The Pre-school had 34.6 per cent.

The lowest groups were again the Regular school (11 per cent) and Residential Provincial (0).

The programs for mentally retarded occupy an intermediate position: Mentally Retarded (27.8 per cent); Trainable Retarded (20 per cent).

This section has described in detail the specific techniques used to implement the language program at various stages. It might be usefully cross-referred to a discussion of the important elements of language program in Chapters 11 and 12.

18.25 Who Devises the Language Program? (4/1)

The answer to this question is clear. The teacher, on his/her own, or in collaboration with school colleagues, takes major responsibility for devising the program. (74.7 per cent of programs)

"Devising" here means selecting and implementing the program, adapting materials and choosing teaching techniques connected with these materials as well as adapting or constructing the program.

Other contributions to devising programs are much less important.

The school staff working together devise program in 20.3 per cent of instances. Programs are developed by teams of professionals or consultants in 14.3 per cent of instances. Development by specific professionals, e.g. speech pathologist, represent only 10.1 per cent of programs.

Curriculum consultants of the board of education devise programs 7.8 per cent of the time, but "other professionals" (psychologists) contribute to only 4.6 per cent of programs.

Teachers may feel confident that they can select or devise their own programs, but their resources for getting and comparing information, reviewing and evaluating programs, are probably limited.

It is disconcerting, though not unexpected, that professional workers in language, or consultants, are perceived by teachers as making only a minor contribution, as compared with the individual teacher or informal association of teaching staff. One inference is that there is insufficient knowledge in this area of the principles underlying language development and the selection of language programs, and that teachers are being left to find their own way.

It will be recalled that a significant proportion of teachers recorded the view that preparation for teaching language handicapped children should be more practical.

A majority of teachers in programs for language-handicapped children come from backgrounds (in teaching slow learners, or behaviorally disordered) which do not give direct preparation for the specific needs of the language-handicapped child, and the specific techniques and programs he requires.

Important questions are raised about the nature of current language programs, and the arrangements for devising them, by the following facts:

1) The relatively high occurrence of unstructured programs.

2) Some teachers' lack of knowledge, suggested by this study, of the principles and theory of language acquisition, and of choice and development of language programs.

3) The bias towards print-language and academic skills and content found in many "language" programs.

Preparation of the program by teachers alone is frequent in the Regular program (92.9 per cent) and Autistic program (100 per cent). Both these programs are examples of the preference (or need) for "do it yourself". Lowest frequencies of reliance on teacher alone were found in Other Residential (0); Hospital (40 per cent) and Pre-school programs (42.3 per cent).

Preparation of the program by the school staff formally working together is, by contrast, most frequent for Other Residential (100 per cent); for Autistics (50 per cent); Pre-school (46.2 per cent); and Other Language (35.7 per cent). It will be recalled that programs such as the Pre-school endorsed school staff meetings as a major vehicle for in-service training and consultation. By contrast, low frequencies of response are found in Residential Provincial (25 per cent), Regional Centre (16.7 per cent) and Hospital (0), as well as for Regular programs (2.4 per cent).

Preparation of a program by a team of professionals is frequent for the Regional Centre programs (66.7 per cent) and Hospital (60 per cent) where the devising of program for small special groups is helped or carried out by consultants, under constant professional monitoring by program leader or professional consultants. The Pre-school (38.5 per cent) also relies on preparation of program by professional teams within the school. It will be recalled that a high proportion of staff of these programs are child-care workers. The Regular program uses this approach in only 10.7 per cent of cases.

Preparation of the program by speech pathologists is found mainly in the Developmental Centre (33.3 per cent) and Mental Retardation (29.4 per cent) facilities, with a scattering of low frequencies over other programs, including the Regular program, which reports 9.5 per cent of use.

Preparation of programs by other professionals than speech pathologists, e.g. psychologists, is rare. This kind of arrangement is recorded for Autistic (33.3 per cent), Hospital (20 per cent) and Regional Centre (16.7 per cent), i.e. probably consists of advice on behavioral-management techniques and on specific sign or symbol programs. The Regular program has a very low entry, 3.6 per cent.

18.26 Use of Space and Teaching Resources (4/1)

18.26.1 The efficient use of space and deployment of teaching materials and resources is central to effective teaching.

In this study, the distribution of teaching space and the use of space and resources were observed and described by the research team. Teachers' views on use of space and resources were recorded. Room plans were recorded for most facilities and are part of the primary data stored, though practical considerations make it difficult to reproduce these plans.

Adequacy of space: information indicates that:

Teaching space is judged as satisfactory in 88.2 per cent of instances. Space was judged as restricted or inadequate in 10.1 per cent of instances.

Learning centres were recorded in 61.2 per cent of cases, i.e. the space and resources of the program permit of the differentiation and use of a variety of learning areas, or access to different kinds of resources within the classroom.

The lowest occurrence of centres is in Other Residential (0); Residential Provincial (27.3 per cent); Developmental Centres (33.3 per cent) facilities. Hospital, Autistic and Other Language rated 100 per cent, Regional Centre 75 per cent. By contrast, 60.6 per cent of Regular (elementary) programs recorded use of centres.

Space was judged as restricted in 11.3 per cent of Regular programs, 30 per cent of Other Language programs.

18.26.2 The organization of space and resources: aims and purpose (4/1)

The organization of the teaching space was judged as "Informal" in 59.2 per cent of instances (i.e. the child could make some contribution to, or decision about, the use of space and suggest activities). It was judged as "Formal" in 57.6 per cent of instances (i.e. desks, seating, children organized by teacher). Judging by the percentages, there is a slight overlap in practice. There is the same division as between "developmental" and "structured/programmed" in general programs.

A "controlled environment", i.e. a classroom with specific areas or resources adjusted specifically to children's handicaps or modes of learning, or to a specific teaching technique, was found in 22.5 per cent of instances. An example of a "controlled environment", in this sense, is a well-equipped classroom for the hearing handicapped, with specific types of hardware and other resources intended to meet the needs of handicapped children and support specific kinds of auditory/language instruction.

Formal structuring of resources, in which teachers taught directly, were normally strictly organized, desk arrangements related to direct instruction and with learning directed to the production of a specific product. This was judged to occur in 60.2 per cent of cases.

More informal learning, and the use of more flexible seating and resource arrangements, including learning centres, was also judged to take place in 49.7 per cent of programs.

Individual carrels for use in study by children were found in 11 per cent of programs. Specific "listening areas" were recorded in only 3.1 per cent of programs. It will be recalled, from earlier in this chapter, that listening/auditory skills are a low priority in the expressed goals of the program, and that opportunities for listening, for the use of aids such as audio-tapes, tend to be less frequent than other forms of instruction or other forms of material aid.

Picture boards and wheel-chairs, etc. for carrying Bliss symbols are found in classes for crippled/physically handicapped children in 3.1 per cent of instances.

Among the various types of facility:

The Regional Centre (100 per cent); Residential Provincial (89.5 per cent); and Autistic (66.7 per cent) programs were those highest on "formal" structure of program and use of resources/space. The first two are known, from other analyses and observations, to be the most structured/prescriptive programs. The Regular program reports 64 per cent, its highest preference.

The Pre-school (95.5 per cent); Other Residential (100 per cent); but also the Autistic (100 per cent) programs claim to be "Informal" in use of space/resources. The Hospital (0) has the lowest frequency of informal arrangements. Other analyses of program materials and teaching techniques have shown consistently the Autistic programs to straddle the structured and the developmental approaches, which are reflected by the Formal/Informal use of space and resources. The Regular program reports 53.3 per cent.

Hospital (100 per cent); Autistic (100 per cent) and Regional Centre (80 per cent) rank highest on structured/programmed teaching approaches. (Teacher initiates, decides content, supervises, specifies end product.) The Regular program reports 53.3 per cent.

Learning centres are found most frequently in Pre-school (86.4 per cent); Autistic (100 per cent); Hospital (66.7 per cent) and Regional Centre (60 per cent) programs but are infrequent in Residential Provincial (5.3 per cent) and Other Residential (0) programs.

This pattern is consistent with previous findings related to use of materials and centres in the Residential Provincial program. The Regular program reports 54.7 per cent of usage.

A controlled environment was mainly identified with the Other Language (70 per cent), Hospital (33.3 per cent), Developmental Centre (50 per cent) and Mental Retardation (50 per cent) programs. The Regular program reported 22.7 per cent.

Other resources are generally too infrequent to be interpreted.

The Bliss Symbol equipment is found mainly in the Hospital program (100 per cent) and only 2.7 per cent in Regular program.

The distribution of answers suggests that different techniques of use of space and resources (formal/directive vs. informal/flexible) may occur even within the same program.

18.26.3 Use of specialized rooms/space (2/1)

As described by the principal, there is only a limited provision of specialized accommodation:

	No.	Per Cent
Behavior modification rooms	9	9.8
Sound-proofed rooms	8	8.7
Observation rooms	7	7.6
One-way windows	2	2.2
Other	10	10.9

Clearly, most programs are accommodated in more or less conventional classrooms.

There is significant variation (chi square, probability .002) between programs:

There are more sound-proofed rooms in special facilities such as Hospital (33.3 per cent); Residential Provincial (33.3 per cent) and Other Language (33.3 per cent).

Observation rooms are found in special programs: Regional Centre (33.3 per cent), Other Language (33.3 per cent), and Autistic (33.3 per cent).

Behavior modification facilities are associated with individualized operant-conditioning programs or structured/programmed approaches in Autistic (33.3 per cent) and Regional Centre (66.7 per cent) facilities. As in other instances the Regular program has a low level of commitment to this approach, 2.2 per cent.

18.26.4 Spaces for specialized teaching (2/1)

These are mainly gym (71.7 per cent). Apart from this, there is little in the way of specialized accommodation. Special kitchen provision accounts for 7.6 per cent of cases; library for 6.5 per cent; own playground for program 3.3 per cent; and movement or dance studio 2.2 per cent. There is a near-significant variation (chi square probability .03) between programs.

There are no workshops or home economics rooms directly accounted for within classroom space, though subdivisions or learning centres might, as in the McHugh School, Ottawa, serve these purposes.

Kitchen accommodation was associated with residential placement in a "house" in the Regional Centre (66.7 per cent) or with an

Autistic facility (33.3 per cent). The dance studio/gym was part of the clinical/educational facilities in the Centre for Child Studies, University of Ottawa.

18.26.5 Seminar rooms (2/1)

Seminar or small study/diagnostic rooms were recorded in 34 (37 per cent) of cases, with no significant variation between types of facility. More such rooms tended to be found in Hospital (100 per cent), Other Language (66.7 per cent) and Regular programs (42.3 per cent) as contrasted with those programs without this provision: Regional Centre (66.7 per cent); Autistic (66.7 per cent); Pre-school (55.6 per cent). The Regular program had 42.2 per cent.

The use of the seminar room by teachers was recorded:

Daily - 22.8 per cent

Weekly - 7.6 per cent

Less frequently - 5.4 per cent

The use of seminar room by children alone was infrequent:

Daily - 10.9 per cent

Weekly - 3.3 per cent

Less frequently - 10.9 per cent

This indicates that children in language programs operate under teacher direction and not often independently.

The relatively infrequent use of seminar rooms, where available, suggests a fairly low frequency of individual tutorial/remedial work with children or groups outside the classroom, or use of such rooms by teachers to prepare programs. Once again, the picture is of a separate classroom.

18.26.6 Access to resources outside the unit

Like outside visits and other experiences, access to space and resources outside the classroom reflects the variety of opportunities offered to the children. Access to outside resources was as follows:

	No.	Per cent
Swimming	40	43.5
Play area	13	14.1
Other community resource (e.g. skating)	11	12.0
Gym	10	10.9
Workshops	2	2.2

The low entry for workshops is expected, in the light of previous analyses of programs and resources. The majority of classrooms are in the "elementary" mode, in which workshop and work experience are not so relevant. The analysis of age distribution places the majority of children in this study in the age-range 6 to 13 years of age. It is puzzling to find such a low frequency of access to the gym, in view of the need for motor and movement education for these children, but this may be compensated for by the emphasis on swimming. Nevertheless, the picture which emerges is of a rather isolated classroom program.

The Autistic (100 per cent) and Regional Centre (66.7 per cent) programs (i.e. those concerned with autistic children) appear to be the best provided with gym opportunities. The Regular program uses an outside gym in 2.2 per cent of cases, a swimming facility in 42.2 per cent.

18.26.7 Was the unit planned or purpose-built? (2/1)

Most of the classrooms were not built for their specific purpose, but were judged by the principal reporting to be "planned" to meet their functions in 55 (59.8 per cent) of instances. The Regular programs claimed 62.2 per cent. This leaves a substantial proportion on which no comment was made or which are, by inference, not planned or adapted to their present purpose. Once again, the evidence points to the typical program for language-handicapped children as being in a conventional enclosed classroom with no particular additional or planned facilities as part of its own premises, and not particularly "specialized" for its purpose. It will be recalled that only a small proportion of "specialist" staff were reported as available to most language programs.

The premises which were most obviously planned to meet specific functions and purposes were in:

Hospital (66.7 per cent); Regional Centre (66.7 per cent); and Residential Provincial (66.7 per cent) programs. The Pre-school (66.7 per cent) and Autistic (66.7 per cent) programs were also among those most likely to be specially located or equipped, or to have been recently adapted to meet their purpose.

18.26.8 Storage of materials (4/1)

Efficient storage, retrieval, and display of materials is important for effective instruction. Storage is therefore related to effective use of space and resources.

Questions were put to teachers on their use of storage.

Storage was changed to meet the needs of children in 49.5 per cent of total cases (37.7 per cent of Regular program) but was also directed by the teacher in 48.5 per cent of cases (37.7 per cent of Regular program). These two arrangements, rather than being contradictory, reflect facets of the same arrangement.

Storage was directly accessible to children in 46.9 per cent of cases, i.e. display areas, learning materials could be reached by children rather than having to be organized by the teacher alone.

This was 47.8 per cent of Regular program.

The mode of storage was altered to meet the needs of the unit of instruction or of subject matter, from time to time, in a lower proportion of cases - 29.4 per cent. Storage of learning materials in the children's own desks (or learning stations) was recorded for only 2.6 per cent of programs.

In summary, storage and organization of materials is in the hands of the teacher and is relatively fixed rather than being varied to meet the demands of a changing program.

In comparing the different types of facility:

The Residential Provincial (23.5 per cent) and Other Residential (0) are the programs with the lowest frequencies of "changing storage to meet the needs of the child". The Residential Provincial program also endorses (70.6 per cent) storage being accessible to the child, as does the Other Language program (72.7 per cent). In the Autistic (0) and Pre-school (26.1 per cent), by contrast, there is a low frequency of direct access to storage of materials by the child, despite the "developmental" bias in these programs.

There is little change of storage with change in instruction or subject matter in Regional Centre (0); Autistic (0); Other Language (9.1 per cent); Pre-school (13 per cent); and Hospital (20 per cent) but a relatively high frequency (42 per cent) of this practice in the Regular (elementary school) programs.

18.27 Assessment and Evaluation

18.27.1 The relevant aspects of evaluation

Evaluation is as important in the process of developing, selecting, and applying curriculum as are goals and objectives. Evaluation not only closes the cycle of curriculum and instruction through the assessment of student progress towards the goals, but involves the adaptation of the program through comparing goals to outcomes. It therefore occurs at the beginning of the operation as well as at the end.

18.27.1.1 Evaluation is complex. It covers the assessment of individual characteristics relevant to learning, i.e. the child's skills, abilities, knowledge, state of readiness, stage of acquisition of language and the like; it also covers those aspects which are likely to affect learning negatively, i.e. disabilities, deficits or lags in development caused by various processes - individual history, social factors, medical, neurological and psychological. (See Eisenson for a detailed discussion and outline.) This is what is commonly called a "diagnosis". However, individual assessment is more general and powerful than mere diagnosis. As Kleffner points out, pathological factors of memory, perception, inability to integrate stimuli, etc. must be taken into account in planning treatment and remediation. They may affect choice of a particular channel of learning, or particular technique, i.e. teaching to strengths and teaching to avoid or circumvent weaknesses. Nevertheless, the most important part of initial assessment is not the diagnosis of problems from other fields, such as psychological, neurological, but establishing the child's level of acquisition of all important aspects of language, and mapping his specific weaknesses and needs in language learning.

18.27.1.2 Initial evaluation, if it is to be used to plan instruction, is concerned not only with the individual's response. It is concerned to establish what language skills or structures, or stages of language, have been mastered, and give specific guidance on the content (the tasks, language structures) which is to be chosen for remediation. As Crystal points out, the major purpose of initial assessment is to establish a rational basis for planning the program. And According to Kleffner, screening tests, or tests which establish the general outlines of the child's disabilities (in educational or psychological terms) are not appropriate for planning the details of the remedial program. A detailed analysis of language should provide such a guide, if used in conjunction with adequate knowledge of the principles and practice of language acquisition.

18.27.1.3 Evaluation is concerned with student progress, i.e. coping with the tasks present, learning the skills taught or moving systematically from one stage to another of a sequence of language. If goals (objectives) have been clearly and explicitly defined in operational terms, with clear ideas on how these objectives are to be realized, then evaluation can in general be said to compare aims (plans) with outcomes, so enabling the teacher, student, and others to judge how far the instruction has been successful and, even more important, how instruction and materials may need to be modified to work more effectively with a given group -- or a given individual (Guralnick (1971)).

The tests and methods used to assess progress (group or individual) are not necessarily the same as those used to make the initial assessment -- though a good language-sampling and analysis technique is likely to meet both requirements. Use of the same test or procedure for evaluating progress as well as defining initial status can lead to situations in which the teacher simply confirms that the student has made progress in the specific goals, processes, or materials defined by the test, i.e. teaching to the test. For example, if the theoretical framework for the assessment is the Illinois Tests of Psycholinguistic Abilities (I.T.P.A.) the choice of teaching materials and approaches is directed by the dubious classifications of language ability in these tests; if the outcomes of learning are tested on the I.T.P.A. this is essentially teaching to the test. There are, in fact, such I.T.P.A. programs. None was reported by the schools/facilities of this study.

18.27.1.4 Lastly, evaluation is concerned with assessing the effectiveness of the program for the particular groups and individuals (its goals, materials, the teaching techniques associated with it). Evaluation of the effectiveness of the program (or rather, of the different kinds of effectiveness of a program in different conditions, with varying groups of learners and teachers) is logically related to the evaluation of student progress. This is obvious, since significant progress by students (which is not due simply to growth or passage of time) implies that the program (tasks, sequences) is relevant to their needs. If the program is effective in providing the conditions for learning, this will be reflected in significant student progress over a reasonable time. Nevertheless, the evaluation of student progress is usually carried out more explicitly and systematically than is the reciprocal evaluation of the programs on which the progress took place.

There is a significant amount of literature on the various aspects of evaluation from goals (objectives) to assessment of program. The reader is referred to a report which deals with some of these issues: "The Evaluation of Student Progress" by the Ministry of Education, Ontario (1976) and a comprehensive account "Evaluation of Student Progress" published by the Manitoba Teachers' Society (1974). (The most insightful discussion of the fundamental issues in "Quality" is in Pirsig (1976).)

18.27.2 Diagnosis and initial assessment

The reader is referred to the chapter on assessment and tests in the Introduction, and to Kleffner (1973), Eisenson (1972) and Carrow (1972) for principles of assessment.

Chapter 14 describes the pattern of "diagnosis", i.e. classification of language disorder, the numbers of diagnoses and placements, data on tests used, and test results in terms of general ability and more specific language difficulties.

18.27.3 Records held by teachers (4/1)

Chapter 14, dealing with individual characteristics of children, listed the records reported by teachers. It will be recalled that the majority had access to the Ontario Student Record, but there were few who reported access, in the classroom files of students, to reports by speech pathologists, psychologists, social workers or medical sources. Observations by the research team suggested that the comprehensiveness of case-records of children held by classroom and/or school varied considerably from facility to facility. Except for basic personal data, the information might be patchy and poorly organized. There appeared to be no common form or system of recording and retrieving information.

Only a minority of respondents answered the question in Schedule 4/1 on the records held by teachers. There were 142 missing cases out of 192.

Of those who responded, the following were the proportions:

	No.	Per cent
Teachers' anecdotal records kept	81	95.3
O.S.R. held	76	89.4
Psychologist's report held	72	84.7
Language/speech assessments	71	83.5

	No.	Per cent
Medical record	71	83.5
Checklist of behavior/progress	69	81.2

This high proportion of response appears to contradict the low proportions for similar records reported in Chapter 14. However, the two perspectives can be partly reconciled if it is borne in mind that the above results are based on a small minority (26 per cent) of respondents. In turn, this is based on 85 (37.4 per cent) valid respondents.

The pattern of response seems to be similar for all programs.

18.27.4 The intake (diagnostic and placement) stage (2/1)

The intake procedure for a unit was by:

	No.	Per cent
Assessment/testing	32	34.8
Referral from other agency	22	23.9
Application	15	16.3
Formal review board	10	10.9
One or two persons decide	2	2.2
Conference/review	1	1.1

There is no significant variation between types of facilities.

Clearly, formal assessment/testing is the usual procedure for diagnosis/placement decisions. It is 31.1 per cent of the Regular program. Next most important is documentation or administrative procedures for transfer from another school or class, e.g. 66.7 per cent for Hospital. In view of the requirements of the educational regulations and importance attached to a formal board of review, by those facilities which use it, it is interesting to see that this method of taking decisions on placement is in the minority (13.3 per cent for the Regular program).

It will be recalled that other evidence (in the discussion of the needs and characteristics of children, Chapter 14) suggests that the variety of test instruments used is often restricted to conventional psychometric instruments which may not be effective for rational planning of remediation.

18.27.5 Criteria for assessment (2/1)

Review of progress or placement in the program is based on the following:

	No.	Per cent
Standardized tests	42	45.7
Review/re-assessment of goals	20	21.7
Teachers' judgement	9	9.8
Professional judgement	7	7.6

	No.	Per cent
Other	3	3.3
Informal checklists	1	1.1
Assessments/probes intrinsic to program	1	1.1
Parental choice as a factor	1	1.1

This list confirms that assessment and placement are mainly by standardized tests (with their particular restrictions) and only secondarily by the use of review, records, or evaluation of the progress of the student in terms of a particular teaching program. There appears to be no significant variation between types of facility. The Regular program reports 57.8 per cent use of standardized test, by far the most frequent practice in this program and the others.

18.27.6 Review procedures used (2/1)

In review of progress, the procedures reported are:

	No.	Per cent
Teachers' within-class judgement	25	27.2
Professional review (medical, psychological, etc.)	15	16.3
School team reviews	13	14.1
Formal review boards	8	8.7
Review/re-assessment of program response/diagnosis	5	5.4
Part of a wider evaluation by school board	3	3.3
By psychologist alone	2	2.2
Systematic evaluation (goals, progress, etc.)	2	2.2

By contrast with intake/diagnostic procedure, review of progress is mainly by a teacher's judgement or that of a school team, based on records and schedules of observation. This finding underlines the fact that programs are often perceived as based in one class or one school.

Review of progress appears to be seen as a matter for the unit alone, i.e. in the hands of the teacher or school team, and does not imply review and re-assessment of the program itself.

Evaluation is rarely part of a wider system.

Procedures for reviewing student progress varied considerably between programs, from direct observation. Units dealing with autistic children, especially if they used detailed behavioral management techniques for individuals following specific goals and sequences of acquiring skills, were forced to use more or less detailed recording methods. The Regular program emphasized teacher judgement (28.9 per cent). Hospital, Regional Centre and Residential Provincial gave more emphasis to professional review (33 per cent).

The need for relating recording/assessment closely to specific goals, criteria for learning and specific steps of mastery is discussed clearly in sources such as the teachers' manual to the Santa Barbara Autism Dissemination Project (1976), Kleffner (1973) and Ruder & Smith (1974).

Specific recording of mastery of specific objectives, according to specific criteria, was noted in facilities such as the Regional Centre programs which were based on behavior-management techniques for individual children, or made use of highly programmed materials.

Alternative to this approach (though also complementary to it) was the procedure adopted by some Pre-school units, in which staff met frequently to define general and specific goals, children were carefully observed as they interacted in small groups or to an individual child-care worker.

Only occasionally (as in the Association Method used for aphasic classes in the Belleville school for the deaf) were the actual structures and stages of instruction in the program used as the direct measure of progress and guide to choice of further instruction.

18.27.7 Instruments and techniques for assessment of progress (4/1)

Evaluation of progress as reported by teachers was by:

	No.	Per cent
Daily teacher records (anecdotal)	129	82.7
Informal observation	108	69.2
Interviews with professional teams and/or parents	103	66.0
Check lists	88	56.4
Formal reports	85	54.5
Formal testing	71	45.5
Case conferences	60	38.5
Professional assessments	51	32.7

Formal systems of evaluation were reported only 1.9 per cent of the time.

Once again, the major forms of on-going evaluation of progress are based on a variety of direct observations, records and check lists by teachers. These take precedence over formal testing, though this, too, has an important part to play. There is rarely any reference to students themselves participating in assessment, or parents being systematically involved in the assessment/reporting process.

The lowest use of daily teacher records was by Hospital (50 per cent) and Other Residential programs (0). All other programs were above 73.3 per cent. Regular program was 77.8 per cent, the highest preference for this program.

Lowest on informal observation were Other Residential (0); Residential Provincial (38.5 per cent) and, among the mental retardation facilities, the Developmental Centre (42.9 per cent) and Mental Retardation facilities (46.7 per cent). All other programs were high on this, especially Regional Centre and Hospital (100 per cent each). The Regular program was 70.4 per cent.

There was less dependence on the school team by Residential Provincial (30.8 per cent) and Other Language (25 per cent), whereas Other Residential, Hospital, Regional Centre and Autistic (100 per cent) rated this technique highly. The Pre-school rated high at 86.4 per cent. The Regular program was 68.5 per cent.

Checklists were least used by Other Residential (0), Other Language (12.5 per cent) and Residential Provincial (30.8 per cent). The Regular program was 57.4 per cent. Autistic and Regional Centre programs made the highest use, 100 per cent.

Formal reports, as such, were not used by Residential Provincial or Other Residential (both 0 per cent). They were low for Other Language (12.5 per cent). They were used 100 per cent by Autistic and Hospital programs, and were high for Regional Centre (83.3 per cent). Regular programs report 55.6 per cent.

Formal testing had a low incidence for Pre-school (13.6 per cent), Other Residential (0), Other Language (0), and Autistic (20 per cent) i.e. groups which, because of age and severe handicap, are not appropriately tested by conventional tests. Residential Provincial programs reported 30.8 per cent and Hospital reported 50 per cent. The Regular program, as before, had the highest usage - 74.1 per cent.

Case conferences were least used by Residential Provincial (7.7 per cent) and Other Residential (0). They were important for Autistic programs (100 per cent), Hospital (100 per cent) and Pre-school (95.5 per cent). The Regular program was low, at 13 per cent.

Professional assessments were highest for Hospital (100 per cent), Autistic (100 per cent), Pre-school (81.5 per cent) and Regional Centre (66.7 per cent) but low for other programs, including Regular program (16.7 per cent).

These data were based on 156 (68.7 per cent) valid responses.

18.27.8 The use of records of previous information (2/1)

These were available in 73 (79.3 per cent) of cases. All programs had high proportions of entry; the lowest were Regular programs (77.8 per cent), Other Language (6.67 per cent) and mental retardation programs.

These records are kept by the teacher in 72 (78.3 per cent) of cases (least for Hospital, Residential Provincial, and Other Language programs, all 66.7 per cent). There were no significant differences between programs for either of these questions.

18.27.9 The number of reviews per year (2/1)

The number of reviews of progress/placement made periodically was unrecorded in 71.7 per cent of cases. Recorded reviews took place:

	No.	Per cent
Monthly	9	9.8
Three times a year	7	7.6
Eight times a year	5	5.4
Twice a year	4	4.3

That is, review took place between nine times a year (or monthly) and three times a year, or every semester in the majority (22.8 per cent) of cases. There appears to be, with these limited data, no significant variation between types of facility.

18.27.10.1 Progress within and between programs (2/1)

An attempt was made to find what specific decisions were reached on promotion, alternative placement, or change of program within the school, or in placing the child in an alternative program outside the school.

Promotion and placement of this kind are a direct measure of the progress of the student and response to his needs, and are an indirect measure of the appropriateness of the program to the student.

It was difficult, in fact, to obtain this information clearly. A small sample of programs, which had already participated in the main study, was also followed up, in the final stages of the research, with a mailed questionnaire which asked for information on the ways in which students were placed, moved, or promoted. Progress within the unit was not recorded in 87 per cent of cases.

When this information was recorded, it was as follows:

	No.	Per cent
Promotion depending on progress within school/unit	4	4.3
Remaining in program for specific time	4	4.3
Leaves program because of age	4	4.3
Progresses through stages of program	1	1.1

18.27.10.2 Progress from the unit (2/1)

This was unrecorded in 88 per cent of cases.

Leaving for another equivalent placement (special) 6 (6.5 per cent)

Returning to regular school - 2 (2.2 per cent).

Little can be inferred from this evidence. It does, however, confirm previous inferences that programs, whatever their level of specialization, regard themselves as serving the special needs of a particular group and tend to keep this group with them over a specific period of time which is terminated by child's age rather than by specific decisions on goals for termination based on progress.

Even in a specialized program, such as that of Bedford Park School (Toronto) for children with severe language handicaps, the criteria for terminating the placement, or for transfer before the end of the elementary school range, did not appear in 1976 to be wholly explicit.

18.27.11.1 Evaluation of program effectiveness (2/1)

Systematic evaluation of student progress and review of goals was found in a minority of programs, tying in with external systems, mainly procedures such as review boards for intake or discharge. The most systematic forms of recording and checking on objectives were found, as expected, in specialized facilities such as the Regional Centre or facilities for the autistic.

A systematic evaluation procedure (beginning with the goals and observations adopted by individual teachers/child-care workers but reviewing the match between goals and outcomes, and decisions on review and change of goals themselves) was found only in the Cecilia Smith Nursery. This system is linked with a computer for storage, classification, and swift retrieval of information.

18.27.11.2 General effectiveness of program (2/1)

An attempt was made to evaluate the feasibility, acceptance by teachers, and general effectiveness of programs in current use. Direct questions proved unsatisfactory. The majority of teachers and principals simply stated that their programs were effective, without qualifications or specification. This is understandable, since a program which is in place and working appears to be effective, and there are usually no criteria, apart from personal or collective experience, to permit of comparative judgements.

Instruction is the immediate aim and it is difficult to generalize about effectiveness except in terms of the short-term responses of the student. To state that programs are ineffective or inefficient would invite the question why they should not be terminated or modified.

The only criteria for effectiveness would appear to be external measurements of progress of specific characteristics under specified conditions, over repeated periods of observation. An alternative is use of the techniques advocated by Guralnick (1971), i.e. "cutting and fitting" instruction and program materials to meet specific goals for a specific individual, so that decisions on program effectiveness are related precisely to specific patterns of need, handicap and ability.

It was also difficult to get any but general statements on the precise grounds for decisions on progress and placement, i.e. change of program, change of teaching technique, change of group or transfer of the child to another program.

There are, as noted, exceptions. The Association Method provides specific criteria within its materials for decisions on progress, i.e. whether or not a student has mastered a stage and can proceed. This is self-checking.

The Distar materials, because they are highly prescriptive and sequential in nature, have an in-built set of criteria for mastery, and advance, or repetition.

The much-used Peabody materials, though graded in content, do not appear to offer the same precision in evaluation of progress. Because it is not firmly structured in linguistic terms, it does not have an in-built sequence of mastery.

Many classrooms rely on "developmental" and unstructured approaches which cannot readily be assessed directly in terms of specific stages of learning or strictly-defined levels of mastery, and require an "external" criterion such as test or check list. The high proportion of check lists and similar specific records used by teachers to assess student progress has been noted.

Crystal (1976) advocated a detailed and theoretically sound analysis of the language structures and stages mastered by the child to guide choice of content and sequence of instruction. Procedures such as this are not usually found. Language sampling is not generally found in the assessment or instructional stages of the programs studied.

As Kleffner (1973) points out, language instruction needs to be structured (to meet the needs of children who have failed to learn language by the usual spontaneous and apparently unstructured means) but relevant to the child's interests, abilities and environment.

19 The Mail Sample: Analyses of Programs

19.1 Methodology of Sample

Modified questionnaires were mailed to 44 schools and 3 agencies. The questionnaires covered most of the questions posed in the interviews based on the main questionnaires already reported.

The units included in this part of the study were those which:

(a) were too distant to be reached conveniently;

(b) entered the study too late for visiting and interviewing; or

(c) had so few children that a special visit and extensive set of interviews seemed to be of questionable value, considering the constraints on time for carrying out the study.

The schools and agencies include:

Northumberland-Newcastle; Bruce-Grey Separate School Board; Grey County; Essex County; Halton; Peel; Niagara South; Wellington County; Victoria County; Lincoln; Oxford County; Etobicoke; Scarborough; Metropolitan Toronto Separate School Board; Nipissing District Separate School Board and Sault Ste. Marie.

The sample overlapped the areas included in the main (interview) sample but included areas which were not visited.

A major advantage of this separate sample is that it acts as a check on the validity and consistency of results based on the main (interview) study. It confirms that similar results are obtained even when interviewers are not present to explain the schedules. This is a further example of the philosophy of this report, that possibly fallible data should be examined from as many perspectives as possible.

Analyses are confined to responses on questionnaires dealing with program, identical with or closely similar to Schedule 2/1 for principals and Schedule 4/1 for teachers in the main study.

It can be stated with some confidence that, in general, the pattern of results confirms the findings based on the main (interview) sample.

One major difference in the mail sample is the predominance of programs based on elementary schools. These form 38 (80.9 per cent) of the mail sample. There are four facilities for the trainable mentally retarded (8.5 per cent); 2 senior elementary schools; 1 hospital; 1 developmental centre and 1 pre-school. There are, therefore, fewer special agencies than in the main sample. The results reflect this difference.

Because the majority of these programs were in elementary schools, it was simpler to examine the statistical results for the elementary schools only, or to assume -- where the pattern of data shows this -- that it is reasonable to look at the total pattern without differentiating in terms of type of school/facility.

The analysis follows the same sequence as the main study, to allow ready comparison.

This mail-questionnaire study was subject to the usual disadvantages of such an approach. Almost all respondents returned the questionnaires, but there was a considerable variation in the high and low responses.

Without the monitoring of response guaranteed by direct interview and observation, it is not possible to check which items are ambiguous, which are difficult to answer, or which are simply ignored. It is strange to find that some of the items most frequently omitted are factual questions relating to qualifications, years of experience, etc.

Despite the limitations of partial data, the pattern of response in the whole sample, over the whole body of questions, is consistent enough with that of the main study to give reasonable confidence in answers to those items where there is a fair proportion of responses. There is no direct evidence of any bias from type of school or area.

19.2 The Background to Program: Organization, Staff and Resources

19.2.1 The unit of program (school)

19.2.1.1 The authority responsible for the unit was predominantly school boards: 42 (89.4 per cent), as expected in a sample composed almost entirely of elementary schools. There were two universities, one unit administered by the Ministry of Health, and one independent agency.

19.2.1.2 The persons in charge of the unit were predominantly the school principal (83 per cent), with two directors (4.3 per cent) and two supervisors (4.3 per cent).

19.2.1.3 The main purpose of the unit was education: 41 (87.2 per cent), with two units (4.3 per cent) placing treatment first, and two units placing diagnosis first. "Diagnosis" took priority in a hospital unit, and "treatment" in a developmental centre.

This pattern is closely similar to that of the main sample.

The placement of the child is:

	No.	Per cent
Daily	38	80.9
Half-time	4	8.5
Sessional	3	6.4

Again, this is similar to the main sample.

19.2.2 The Child in the Program

19.2.2.1 The total number of children in the unit ranged from 2 (2.1 per cent) to 750 (2.1 per cent).

The mean is 244.1 (elementary schools) and 191.8 (total sample) reflecting the smaller size of specialized units other than regular schools. It is a matter of some concern that 32 (68.1 per cent) responses were unrecorded.

19.2.2.2 The age range of children is as follows:

(a) lower bound: 3 years (2.1 per cent) to 10 years (2.1 per cent) with a mean of 6.2 years (elementary) and 5.9 years (total sample).
(b) upper bound: 6 years (4.3 per cent) to 21 years (6.4 per cent) with a mean of 12.5 years (elementary) and 12.2 (total sample).

This is the same age-range as in the main sample viz. mean range of 6 to 12/13 years of age in programs.

19.2.2.3 The teacher-student ratio ranged from 1 to 1 (2.1 per cent) to 1 to 30 (4.3 per cent), with a mean of 1 to 12 (elementary) and 1 to 11.25 (total sample). This is a rather less generous ratio than in the main sample. It reflects the fact that the sample has a majority of elementary-school programs which were shown, in the main analysis, to be less generous than in special units such as hospitals, pre-schools, and developmental centres.

19.2.2.4 Classification of children in the program is as follows, as described by the principal:

	No.	Per cent
Age	14	29.8
Mental age	4	8.5
Functional level	4	8.5
Language level	4	8.5
Academic progress	1	2.1
Whether parents can cope/co-operate	1	2.1
Teacher's talent or special program	1	2.1

This pattern of organization of children is similar to that in the main sample, i.e. reliance on age as basis of grouping by the unit, followed in importance by mental age. There is less emphasis here on social behavioral criteria. In both samples, language level takes a lower priority as basis of school/unit organization.

19.2.3 Administration and Staffing

19.2.3.1 The principal's qualifications are listed as:

B.A.	7	14.9
M.A.	5	10.6
Principal's Certificate	4	8.5
Other	3	6.4
Ministry of Education courses	1	2.1

A considerable proportion of responses (57.8 per cent) were omitted. There appears, from the recorded data, (which may be biased), fewer M.A. and B.A. qualifications in this sample than in the main sample.

It was impossible to analyze the principal's experience in regular school or with exceptional children, as this was omitted.

19.2.3.2 Full-time staff

(1) The number of full-time teaching staff was reported as ranging from 1 (2.6 per cent) to 18 (5.3 per cent), with a mean of 7.4 teachers (elementary) and 7.8 (total sample).

(2) Very few child-care workers are reported: 1 in one school, 4 in one developmental centre. This is as in the main study, where few schools had child-care workers.

(3) The majority of units (44 or 93.6 per cent) had no full-time speech pathologists. One elementary school claimed to have one pathologist; one developmental centre claimed two pathologists.

(4) Very few schools had a social worker: 44 (93.6 per cent) said they did not have one. One is reported by one elementary school; one hospital had an establishment of 3, and one developmental centre had two social workers.

(5) There were no occupational therapists.

(6) There were practically no physiotherapists (97.9 per cent). One school claimed to have one.

(7) Very few full-time psychologists are employed (93.6 per cent of units do not have one) but two schools had one each and a developmental centre also had two.

(8) As expected, there were practically no full-time psychiatrists (97.9 per cent) but one hospital reported having one.

(9) There were no full-time nurses attached to schools/units.

(10) There were few administrators: 34 units (74.5 per cent) did not have one, but 3 schools claimed to have one, and 7 schools claimed to have two.

(11) There were practically no librarians: (95.7 per cent of schools reported having none) but two schools claimed one each.

(12) The majority of schools have no teacher-aides (40 or 81.1 per cent). Four schools have one teacher-aide, one school has two, and one school for the mentally retarded had 3.

19.2.3.3 The total number of full-time staff ranges from 1 to 25, with a mean of 8.4 (elementary), 9.4 (total group).

Although there are differences in numbers, particularly for teaching staff, the pattern of provision is closely similar for mail and main sample.

A considerable proportion of responses: 26 or 55.3 per cent, were unrecorded.

19.2.3.4 Part-time staff

(1) The majority of schools (42 or 89 per cent) do not have part-time teachers. Two have one teacher; one has 2 and two have 3.

(2) The majority of units do not have part-time child-care staff; (45 or 95.7 per cent) but two schools have 1 each.

(3) The majority of schools: (37 or 78.7 per cent) have no part-time social worker. Eight schools reported having 1, a developmental centre has 1, and a school for the trainable mentally retarded has 1.

(4) There are more part-time speech pathologists: 22 schools (57.9 per cent) have 1; 3 schools (7.9 per cent) have 2. Two schools for the trainable mentally retarded have 1 each.

(5) There are no part-time occupational therapists.

(6) The majority of schools (97.9 per cent) do not have part-time physiotherapists.

(7) The majority of schools had no part-time psychologist (33 or 70.2 per cent). Thirteen schools had 1 part time psychologist each. One school for the trainable mentally retarded had 1.

(8) Forty schools (85.1 per cent) had no part-time psychiatrist. Six schools claimed to have 1 each, and one developmental centre reported having 2 part time psychiatrists.

(9) A majority of schools (41 or 87.2 per cent) did not have a part-time nurse. Six schools (12.8 per cent) had 1.

Presumably the respondents interpreted "part-time" as half-time or a large fraction of time. Presumably, from these data, public health nurses distribute their services over several elementary schools.

(10) There are no part-time administrators.

(11) Forty-two schools (89.4 per cent) had no part-time teacher's aides.

(12) The majority of schools (46 or 95.7 per cent) had no part-time remedial teachers.

The pattern is similar to that in the main study.

Total number of part-time staff ranged from 1 (8.1 per cent) to 7 (2.1 per cent). The mean number was 3.3. There were 28 unrecorded responses (59.6 per cent).

19.2.3.5 Volunteers The majority of schools (41, or 87.2 per cent) had no volunteers assisting in the classroom. Two schools (4.3 per cent) had 1 volunteer; two schools had 2, and two schools reported having 6 volunteers.

19.2.3.6 Students observing and assisting The majority of units (83 per cent) had no visiting outside students, but the range where they occurred was from 1 student (4.3 per cent) to 9 students (2.1 per cent). It is evident that the non-school units have more students visiting, observing or assisting.

Forty-three schools (91.1 per cent) did not have parents actively participating in the program. One school reported 1; one school reported 3, and one reported 9 parents. It is useful to cross-refer to the following chapter, which gives the views reported of a sample of parents on liaison and co-operation with the school. The results of the main sample also show that involvement of parents is apparently viewed as a minor aspect of the program.

19.2.3.7 Additional professional staff reported by the school were:

Consultants	20	42.6 per cent
Medical	16	34.0 " "
Psychologists	5	10.6 " "

This is similar to the main sample, but with less medical and more consultant support.

19.2.4 The Teachers

19.2.4.1 Teachers' qualifications were reported as:

	No.	Per cent
Teacher's certificate only	18	60.0
B.A.	12	40.0
Other	11	36.7
B.Ed.	2	6.7

This is based on 30 valid cases, 17 missing. The distribution of qualifications is similar to that in the main sample.

19.2.4.2 Professional courses taken by teachers were:

	No.	Per cent
Ministry of Educ.(Specialist)	12	54.5
Longer courses	9	40.9
Local professional develop.	3	13.6
Ministry of Educ. (Intermed.)	3	13.6
Specific training courses (e.g. North Western Univ.)	2	9.1

This is based on 29 valid responses.

19.2.4.3 Years of experience with regular classrooms was omitted in 46 (97.9 per cent) of responses. The same is true of years of experience with exceptional children. Therefore, no comparison can be made with the main sample.

19.2.4.4 Specific background in special education There were only 10 valid responses to this question. Of those recorded:

	No.	Per cent
Experience with slow learners	5	50
Experience with hearing handicapped	2	20
Experience as language teacher	2	20
Experience with specific learning disability	1	10

Despite the small figures, the pattern is very similar to that in the main study, confirming that the main background of teachers of children with language handicap is with slow learners and, to a lesser degree, hearing handicapped. There are fewer teachers with a background in specific learning disability.

19.2.4.5 The kinds of specialist teacher available in these units are reported by the principal as "specialist"in:

	No.	Per cent
Speech	18	38.3
Movement/motor	1	2.1
Behavior	1	2.1

A majority (57.4 per cent) of responses were unrecorded. The emphasis on speech/language as the qualification of a specialist teacher is similar to that in the main study.

19.2.4.6 The total number of "specialist" teachers is reported as being 33 (70.2 per cent) with a range from 1 to 5 in a given school (mean number 1.8 in the elementary schools).

19.2.5 Teachers' Views of Developments and Improvements Needed

19.2.5.1 The principals' views: Of these, 76.6 per cent were unrecorded. References were made to needs for change in organization (1 case); better specific preparation for teaching in this area (2 cases); improved diagnosis (1 case) and improved professional support (1 case). Few conclusions can be drawn from these data.

19.2.5.2 The teachers' views: Only two valid responses were recorded. Both of these recommended more practical approaches to training and the need for training in specific techniques.

Again, no conclusions can be reached.

19.2.6 Provision for Professional Development

19.2.6.1 Provisions for professional consultation/conferences Responses were not recorded in 38 (80.9 per cent) of cases. Of the remainder, 5 (10.6 per cent) said there was provision for professional consultation/conferencing and 4 (8.5 per cent) said there was not effective provision. The positive answers were divided as follows:

Professional development provision	1
Consultant help/guidance	2
Staff meetings	1

19.2.6.2 Provision for in-service training Responses were not recorded in 39 (83 per cent) of cases. Positive answers were 4, negative (i.e. no provision) also 4. In-service training took the form of professional development days (2 cases) and consultant help (2 cases). No conclusions can be drawn from the last two questions.

19.2.7 Relationships with Other Schools

Twenty-five (53.2 per cent) of responses were unrecorded. Of those recorded, the pattern was as follows:

	No.	Per cent
Formal exchange of students	7	14.9
Exchange of staff	6	12.8
Informal exchange of students (games,etc.)	5	10.6
No relationship	4	8.5

This is similar to the main study. The implication is that units for language handicapped children tend to be self-sufficient.

Information on visits from other schools gives another perspective on this question. Of the schools responding to this question, twenty-five (53.2 per cent) reported that there were visits from other schools but it was a lower proportion of visiting than in the main sample.

19.3 The Program: (Mail Questionnaire Sample)

19.3.1 The Goals of the Program

19.3.1.1 The stated goals of the principal. These were:

	No.	Per cent
Developing child's language to optimum	14	29.8
Developing social and self-help skills	12	25.5
Developing academic achievement	11	23.4
Developing self-help/adaptive skills	10	21.3
Preparing the child to adjust to society	7	14.9
Developing a sense of environment	7	14.9

	No.	Per cent
Returning the child to regular school	5	10.6
Returning the child to less extreme special education	5	10.6
Developing good mental health	5	10.6
Giving a child better/alternative forms of communication	4	8.5
Raising a child to age/mental age level	4	8.5
Improving receptive language	4	8.5
Improving expressive language	4	8.5
Improving social interaction within the school	4	8.5
Helping a child accept his/her limitations	3	6.4

The pattern is as in the main study, except for a reduced response rate. The most important goals are clearly developing language to its optimum, but there is considerable emphasis on social and adaptive skills and on academic achievement.

19.3.1.2 Realizing the goals proposed: There were disappointingly few responses to this question (98.7 per cent unrecorded).

19.3.1.3 Goals expressed by teachers, summarized from a variety of statements:

	No.	Per cent
Individualized goals emphasizing language/communication	12	48.0
Individualized goals: social and self-help skills	8	32.0
Individualized goals: academic progress	8	32.0
Generalized goals: academic	6	24.0
Generalized goals: social self-help skills	5	20.0
Individualized: integration of areas of learning	5	20.0
Generalized: language/communication	4	16.0
Generalized: integration of areas of learning	3	12.0

The pattern of teachers' goals follows that of principals, i.e. emphasis on language, but also social/adaptive skills and academic progress. Compared with the main sample, there is more emphasis here on individual goals for children.

19.3.2 Teachers' Approaches to Learning

19.3.2.1 Preferred approaches to learning were:

	No.	Per cent
By information processing (skill teaching)	28	82.3
By experience and activity	19	55.9

This is based on 34 cases with an obvious overlapping.

In other words, the preferred approach is through direct teaching, transmission of information and skills, rather than through arranging the situation so that the child learns through his own experience. This is much more heavily emphasized than in the main sample. However, both approaches appear to be favoured significantly. It is clear that they must overlap in the same classroom or program, in the same way as "developmental" and "structured" approaches to content and sequence of program are likely to be found in the same classroom at times.

19.3.2.2 Motivation and reinforcement preferred by the teacher are:

	No.	Per cent
Approval (extrinsic)	29	78.4
Finishing task, mastery (intrinsic)	20	54.1
Tokens, reward, etc. (extrinsic)	7	18.9
Modelling on teacher, etc. (extrinsic)	3	8.1
Curiosity, exploration (intrinsic)	3	8.1

This was based on 37 valid responses. The pattern follows the main sample in emphasizing "extrinsic" forms of control and motivation, based on teacher approval, rather than "intrinsic" forms arising from the child's own activities. Nevertheless, there is more emphasis in this sample on intrinsic motivation (mastery and finishing task) which appears to be important, and there is less emphasis on behavior modification.

19.3.2.3 The organization of the timetable is as follows:

	No.	Per cent
With specific time-slots	17	84.6
Individualized for specific children	8	30.8
Same for all children	8	30.8
Permits rotary arrangement	8	30.8

As in the main sample, the timetable with fixed specific slots for lessons/activities, etc. is the most frequent arrangement, but is accompanied by arrangements for individualizing the timetable to meet the needs of individual children. Clearly there must be an overlap between the fixed timetable and arrangements to vary the way in which children learn. The overlap between the more "directive" and "open" forms of timetabling parallels the overlap between kinds of motivation, and between kinds of program in the same program.

19.3.3 Grouping for Instruction

19.3.3.1 The organization of major groups for teaching/learning

The basis of group instruction is:

	No.	Per cent
Language programs/direct teaching	22	81.5
Language games and activities	16	59.3

	No.	Per cent
Reading	14	51.9
Spelling	8	29.6
Math	8	29.6
Other	8	29.6
Grouping varies to meet specific needs	5	18.5
Not always grouped	4	14.8

The bases for grouping are essentially the same as in the main study: language is the most important, as expected, but there is significant emphasis on academic subjects as reasons for grouping. The responses were based on 27 valid cases.

19.3.3.2 The organization of individual learning. This is as follows:

	No.	Per cent
For language programs/direct teaching	17	73.9
According to specific language problems	13	56.5
For language games/activities	11	47.8
Reading	10	43.5
Individualized at different times of day	10	43.5
Spelling	6	26.1
Math	6	26.1
Other	3	13.0

There were 23 valid cases. The pattern is similar to that of the main study. There is the same emphasis on language but also on the importance of reading.

19.3.3.3 Reasons for major groupings were given in only 12 cases:

	No.	Per cent
To promote discourse	11	91.7
Age level	6	50.0
Communication level	3	25.0
Language/program level	1	8.3
Specific language problem	1	8.3

Groups had the major purpose of controlling and promoting language and communication. Groups did not exist to meet specific (individual) language problems but only what was common to children.

19.3.3.4 Reasons for individual organization of learning were given in only eleven cases:

	No.	Per cent
Different levels of development	8	72.7
For remedial work	6	54.5
Children at different levels in language	5	45.5
Checking on child's progress	5	45.5
Behavior of child	3	27.3
Specific language problem	3	27.3

Even in organization of individual work, the emphasis was on the different levels of language, rather than on specific problems. In general, the pattern follows that of the main study.

19.3.3.5 The instructional situation was:

	No.	Per cent
Mainly by group instruction	13	81.3
Mainly individual	12	75.0
Class instruction	10	62.5

This finding confirms the preference for group instruction in language programs, but also illustrates the use of all techniques and overlapsbetween class, group, and individual teaching techniques in the same program. This was based on 39 valid cases, of which 16 responded.

19.3.4 The Content of the Program

The teachers attached more or less equal importance (as in the main study) to all aspects of the school curriculum or major learning areas: language skills, motor skills, problem-solving (science, math), use of symbolic systems (e.g. math), aesthetic-expressive experiences, and the learning of values.

19.3.4.1 The nature of the language program There were 30 valid cases as basis for this set of responses. The choice of language programs was:

	No.	Per cent
Developmental (environmental)	23	76.7
Developmental (for entry to program)	17	56.7
Developmental (sequence of acquisition of language)	17	56.7
Structured	17	56.7
Programmed	13	43.3
Linguistic	1	3.3
Syntactic	1	3.3
Semantic	1	3.3

As in the main sample, the developmental approaches predominate, but there is a strong commitment to structured programs (within the liberal definitions of this study, e.g. use of Peabody materials) and significant use of prescriptive/programmed approaches. Nevertheless, very few programs are explicitly and rationally based on linguistic principles. The same overlap, probably within the same program, at times, between developmental and structured programs illustrates the variety of programs and instructional procedures being used. It parallels the commitment to both information-processing and experience, and the probability that different approaches are combined in the same program.

19.3.4.2 Alternative symbol systems Only 6 valid responses were given. This question is obviously irrelevant to most elementary school language programs. Answers were: Bliss Symbol system - 3 cases; sign language - 1 case; organized gesture - 1 case; finger-spelling - 1 case.

19.3.4.3 Do schools have preferred programs? This was unrecorded in 23.4 per cent of cases. On the whole, the answer is NO, 19 responses (40.4 per cent) and YES, 14 responses (29.8 per cent).

This reverses the trend in the main sample.

19.3.5 Program Materials and Techniques

19.3.5.1 Commercial program materials Responses were based on 39 valid cases. Preferences for materials were as follows:

	No.	Per cent
Workbooks	28	71.8
Reading series	26	66.7
Peabody materials	23	59.0
Math series	15	38.5
Distar program materials	14	35.9
Spelling series	13	33.3
S.R.A. Reading Program	12	30.8
Phonovisual reading	12	30.8
Stott Programmed Reading	6	15.4
Behavior modification	1	2.6
Frostig	1	2.6
Fitzgerald Key	1	2.6

This confirms the emphasis found in the main study, on academic programs and materials, particularly those of a programmed kind.

19.3.5.2 Non-commercial program materials (based on 36 valid cases): Materials in common use were:

	No.	Per cent
Art activities	34	94.4
Pictures	31	86.1
Puzzles, sensori-motor materials	30	83.3

	No.	Per cent
Puppets	27	75.0
Dressing-up/drama	19	52.8
Lego/construction toys	17	47.2
Blackboard	17	47.2
Flashcards	14	38.9
Flannel boards	11	30.6
Climbing frames	9	25.0
Sand/water	7	19.4
Piano	4	11.1

This sample has the same emphasis as the main sample, on use of art, pictures, puzzles, and puppets as important vehicles of learning.

19.3.5.3 Commercial aids, games and activities By contrast, there were only 17 valid cases as basis for this table.

	No.	Per cent
Word games	12	70.6
Perceptual games	8	47.1
Phonics games	8	47.1
Number games	8	47.1
Visual memory games, etc.	8	47.1
Card games	6	35.3
Adaptive skills/activities, e.g. lace-up board	6	35.3
Classification	4	23.5
Matching	4	23.5
Sorting	4	23.5

There is the same emphasis as in the main study on word games, perceptual games/activities and reading, but less on number, visual memory and the fundamental activities of classifying, matching and sorting.

19.3.5.4 Teacher-made materials and aids to teaching There were 25 valid cases. They are as follows:

	No.	Per cent
Dittoes, workbooks	18	72
Flash cards	17	68
Concrete objects	16	64
Experience charts	13	52
Stories	12	48
Pictures	11	44
Number concept cards	10	40

	No.	Per cent
Calendar	9	36
Games, math	9	36
Colour chart	5	20
Listening centres	2	8

As in the main sample, the emphasis is on the use of concrete objects, pictures, and flashcards in teaching, but there is more emphasis here on programmed "lesson" materials such as dittoes and workbooks. Again, use of listening centres seems to be infrequent.

19.3.5.5 Special learning centres to act as focus for specific aspects of learning were referred to in only 12 responses. They are as follows:

Language/listening centres	10	83.3
Domestic play centres	6	50.0
Art	5	41.7
Other	4	33.3
Music	1	8.3
Woodwork	1	8.3

The emphasis, as in the main sample, is on language/listening and art centres. Music, as in descriptions of materials and aspects of program above, has a low priority, as does woodwork/craft.

19.3.5.6 Other areas/centres of learning outside the classroom This was based on 32 valid cases:

Outside school experiences (unspecified)	28	87.5
Visits/field trips	26	81.3
Within school but outside classroom	22	68.8
Gym/swim/dance	21	65.6
Shopwork	12	37.5
Art	5	15.6
Other	5	15.6

By contrast with the main sample, there is more emphasis on activities outside the school. The main sample contained more special and residential units which would have their own facilities or be more self-contained. There is the same emphasis, as in the main sample, on gym, swimming, etc. as chief activities outside the classroom, but infrequent access to specialized art facilities.

19.3.5.7 Teaching techniques and audio-visual aids Responses were based on 37 valid cases. The techniques used were as follows:

	No.	Per cent
Film/slides	35	94.6
Gramophone records	35	94.6
Audio-tapes (published)	29	78.4
Language Master	16	43.2
TV/videotape	9	24.2
Overhead projector	5	13.5
Headphones/amplifiers	3	8.1
Talking books	1	2.7
Other	1	2.7

This is much the same pattern of use as in the main study, i.e. emphasis on the use of film/slides, records, and audiotapes, but relatively little use of TV and of specialized language/listening equipment.

19.3.6 Specific Techniques in Stimulating and Directing Language Learning

An attempt was made to discover how teachers set about the specific tasks of organizing and stimulating: play, attention, vocalizing, using words, developing patterns of words and discourse. As in the main study, it becomes clear that many programs do not pay specific attention to these factors, or that teachers may use techniques to stimulate pre-verbal and language learning, but are not aware of, or do not analyze, what they do. In this sample, there were many omissions of responses.

(1) In stimulating play, there were 26 valid responses:

	No.	Per cent
Presenting stimulating materials	15	57.7
Other	12	46.2
Providing reinforcement/motivation	8	30.8
Having others model for child	3	11.5

(2) In stimulating attention, there were only 12 valid responses:

Verbal cues	12	100.0
Physical prompts	5	41.7
Gestural prompts	3	25.0
Commands and isolation	1	8.3

For the other categories of verbal learning, the valid responses were only 12 or 13, and the responses to the question were not recorded. Clearly, without the explicit guidance offered in an interview, these questions were not readily answered, or their significance was not perceived.

19.3.7 Who Devises the Language Program?

There were 30 valid cases with responses as follows:

	No.	Per cent
Teacher alone	26	72.2
Professionals	8	22.2
Team of professionals/consultants	5	13.9
School staff	3	8.3
Specific professional, e.g. psychologist	1	2.8

As in the main study, the person who is most frequently responsible for devising the classroom program in language is the teacher alone. Much less frequent is the program devised by professional teams, consultants, or the school staff working together. This finding, like others, emphasized the relative isolation of the programs for language-disordered children.

19.3.8 Use of Space and Teaching Resources

19.3.8.1 Use of space and materials Only 5 valid cases occur and these are classified as follows:

	No.	Per cent
Space available is satisfactory	4	80
Reference made to designated centres	2	40

19.3.8.2 Organization of space and resources The five responses recorded illustrate the following use of resources:

	No.	Per cent
Informal use of space	3	60
Learning centres	2	40
Individual carrels	2	40
Desks	1	20
Headphones/amplifiers	1	20

The reader is referred to the main study (which has a similar distribution) for discussion of the categories in this question.

19.3.8.3 The use of specialized rooms/spaces

There were very few specialized rooms/spaces. In 42 cases (89.4 per cent) these were not reported. Two sound-proofed rooms were reported, two observation rooms, and one other. As in the main sample, it is clear that the typical language program takes place in a classroom with no particular specialized spaces or equipment.

19.3.8.4 Spaces for specialized teaching/special activities

	No.	Per cent
Gym	27	57.4
Library	6	12.8
Music/drama/dance studio	1	2.1
Remedial room	1	2.1
Playground	1	2.1

This reflects the main sample, i.e. children in language programs have access to the gym in a fair number of instances (confirming previous questions which indicate gym and swimming as the major "outside" activities). Other than this, there is little access to or use of specialized facilities.

19.3.8.5 Seminar rooms and similar specialized rooms for study and individual tuition were generally not available. Forty-one units (87.2 per cent) did not have them.

19.3.8.6 Access to resources outside the school/unit

Unrecorded responses were 51.1 per cent. The recorded responses gave the following pattern:

	No.	Per cent
Swimming	17	36.2
Gym	5	10.6
Play area	1	2.1

This confirms, again, that swimming and gym are the main outside activities, and that of these, outside facilities for swimming are much more frequently used than facilities for gym.

19.3.8.7 Was the unit planned?

There was a very high frequency of failure to record this answer - 40 omissions (85.1 per cent). In two instances, the unit was reported as "planned" for its purpose. Clearly, the degree to which a facility can be regarded as "planned" for its purpose depends on interpretation. It seems likely that most units in which language programs for language-handicapped children are found have not been specifically planned or built for that purpose.

It is of interest that questions relating to use of space have the highest proportion of omissions. It may be that teachers are less aware of their organization of space and related resources than they are of other factors in the classroom. Certainly, observation, description, and analysis of space were more effectively carried out when external observers made this explicitly part of their task (i.e. drawing room plans, schedules of materials, disposal of teaching equipment as part of the raw data of this study).

19.3.8.8 Storage and organization of teaching materials There were only 7 valid cases, as follows:

	No.	Per cent
Storage changed to meet children's needs	4	57.1
Storage of materials/equipment directed by teacher	4	57.1
Storage accessible to individual child	3	42.9
Storage changed to meet needs of unit of instruction	2	28.6

This follows the pattern of the main study.

19.4 Assessment and Evaluation

19.4.1 Records held by teachers

There were only three valid responses.

19.4.2 Intake procedure (diagnosis and placement)

Fifteen responses (31.9 per cent) were omitted. Of those recorded, intake was by:

	No.	Per cent
Application to school	9	19.1
Referral from other schools	9	19.1
Assessment and testing	4	8.5
Conference/interview	4	8.5
Formal board of review	3	6.4
One or more persons decide (e.g. principal)	3	6.4

The pattern is essentially similar to that of the main study, but with lower frequency of responses. In general, intake procedures appear not to depend on formal review boards.

19.4.3 Criteria for assessment

Twenty-four (51.1 per cent) responses were omitted. The main criteria were:

	No.	Per cent
Standardized tests	15	31.9
Professional judgement	6	12.8
Teacher's judgement/records	2	4.3

Except for a higher incidence of "professional judgement", this is similar to the main study. The reader is reminded of the reservations expressed about standardized tests of language in the chapter on assessment (Introduction) and the sobering findings on kinds of tests used for individual children in Chapter 15.

19.4.4 Review procedures (progress, promotion, placement)

Eighteen responses (38.3 per cent) were omitted. Review procedures that were reported indicate:

	No.	Per cent
School team (e.g. principal, teacher)	8	17.0
Professional (medical, psychologist, speech pathologist)	8	17.0
Formal review board	5	10.6
Teachers' within-class judgement	3	6.4
Review of program progress/diagnosis	2	4.3
Formed part of wider evaluation (e.g. board of education)	2	4.3
Formed part of systematic evaluation	1	2.1

This is similar to the main study, but with less emphasis on teacher within-class judgement and more emphasis on review by an in-school team. The "isolation" of language programs/schools is again evident, i.e. the review/evaluation of progress and program. It is unusual to find that review of progress is part of a systematic evaluation.

19.4.5 Number of reviews per year

In the majority of cases, this was unrecorded (85 per cent). Of those recorded, the responses were:

1 review per year	4	8.5
2 reviews per year	3	6.4

This is a lower frequency than reported by the main study, which included many more specialized units.

19.4.6 Records of previous placements

In the majority of cases this was unrecorded: 44 (93.6 per cent of cases).

19.4.7 Progress within program or from the unit

No response was offered to this question. It may be recalled that 88 per cent of responses to this question were unrecorded in the main study. This question appears to be a difficult one. Principals and teachers may prefer not to answer it, since it implies an evaluation of the program and of the methods of assessing the student's progress.

19.4.8 No data were collected on the general effectiveness of the program as perceived by teachers/principal. It was found in the main study that this was an ineffective question, since it was either not answered or always answered positively.

Lower than response to other types of question relating to program were the responses to questions on assessment and evaluation, i.e. of student placement and progress, of program. This may suggest that, currently, assessment and evaluation are the aspects to which least attention is given.

The above discussion described and analyzes the program as perceived by the mail sample. Below is given an analysis of the classes which formed the actual classroom programs within the schools/units in this sample. This illustrates the kind of student and program likely to be found in this sample (mainly of elementary school programs).

19.5 Relationship of class/program type to school type

The elementary school programs were divided as follows:

	No.	Per cent
Regular elementary class	10	27.0
Special education class	8	21.6
Mental retardation group	6	16.2
Opportunity/general learning disability	5	13.5
Withdrawal (resource teacher/therapist)	4	10.8
Some integration with regular class	3	8.1
Special speech class	2	5.4
Hard of hearing	2	5.4
Behavioral class	2	5.4
Motor-handicapped	2	5.4
Diagnostic group	2	5.4
Specific learning disability	1	2.7
Remedial	1	2.7
Total communication	1	2.7

The Hospital program had a special language class; the Pre-schools had a "regular" class. The trainable retarded schools were organized as follows:

Mental retardation group	3
"Regular"	1
Bliss Symbol program	1
Withdrawal	1
Integration with regular	1

The obvious conclusion, as in the main sample, is that there is a tremendous variety of kinds of classroom/program within the schools which provide "language" programs. The obvious -- and surprising -- emphasis within classes is on slow-learning and general disability groups. It may be recalled that the training/experience of teachers in these programs is often with the slow learning.

What is missing is emphasis on specific learning disability, which is the area with which language disability might be expected to be associated.

19.6 SUMMARY: PROGRAMS (MAIN AND MAIL SAMPLE)

It is difficult to summarize effectively the variety and complexity of facts regarding programs. What this chapter has set out to do is to obey the main theoretical and pragmatic approach underlying this study which is to approach possibly fallible data from several different perspectives, in order to establish consistencies and regularities.

There has been an attempt to look at the whole complex of curriculum activity covering definition of goals, identification of the needs and abilities of the learner, choice of learning situations and materials, preference for particular learning approaches, teaching procedures, and the evaluation of the whole cycle of curriculum.

The "program" has been analyzed in terms of factors such as:

1) stated goals from two perspectives - the principal/institution and the teacher
2) intended or actual ways of realizing those goals
3) preferred teaching approaches
4) forms of motivation/reinforcement
5) grouping and organization to meet the goals and practical needs of instruction
6) ways of using material resources and teaching aids
7) the range and variety of materials which are the raw material of the program and indicate its likely scope and direction
8) the specific preferred techniques for achieving successive stages in communication/language
9) the deployment of space and resources.

Taken together, interacting and illustrating one another, they offer a map of the kinds of program for language-handicapped children currently being offered in Ontario, insofar as this study was able to sample and observe them.

Much longer-term observation of specific programs is needed, with detailed recording of sequences on video- and audio-tape. Indirect, but structured, instruments (e.g. the repertory grid)* are needed to establish the meanings of statements in the slippery area of "goals" and the relationship between belief, intent, plan for action, and actual outcome. "Iterative" approaches such as Bayesian statistics are more appropriate for analyses of hypotheses and statistical groupings or estimates (see Kass, C.E. (1977)).

The highest priority in teacher's stated goals is the improvement of language but almost equal importance was attached to adaptive and social skills and to academic progress. The organization of group and individual learning reflected these goals.

The predominant teaching approach was direct instruction and skills teaching, but with important commitments to learning through activity and experience. Both these approaches might be found in the same program. They were certainly found in combination in the more specialized programs.

Teacher approval (extrinsic) was the preferred form of motivation and control, with secondary emphasis on satisfaction in task

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* See Nash (1972)

(intrinsic). There was little commitment to dependence on motives of curiosity and exploration; equally, however, there was little commitment in most programs to rigorous behavior modification or the use of primary reinforcement.

In the content and sequence of program, the main emphasis was clearly developmental. There was also a strong commitment to structured approaches and prescriptive programs, especially in the special and residential units. The evidence suggests that different approaches can be found at different times or for different purposes within the same program.

Despite this finding, there was no evidence that most programs had a clear and specific linguistic foundation. Programs, in general, appeared to be pragmatic. They start from the immediate problems of the child's needs and the programs available in the classroom, rather than defining, on a planned basis, the language level and needs of the child and selecting/adapting programs, using knowledge of language development, linguistics, and the variety of program approaches and materials now available for remediation.

Alternative forms of communication, such as Bliss Symbols or sign language, were confined to special programs for the severely handicapped groups.

Intake procedures to units emphasized direct referral or use of standardized tests, but assessment of progress in the program was mainly in the hands of the teacher, making use of observation, checklists, and other class-based approaches. There was rarely direct or systematic relationship between the evaluation procedures used for the language units and those of the wider system. No clear evidence came to hand of how children are discharged, or promoted, from the program except in the special programs.

There was no general evaluation of the effectiveness of programs. In many respects, classes in the Regular programs come to resemble special education classes of a more general kind in their use of materials, approaches, and the emphasis on grouping by academic criteria (reading, spelling, etc.) and use of print materials in instruction.

To answer questions, such as what is the effectiveness of programs, and what criteria govern choice and use, it would be necessary to develop a detailed series of program evaluation studies, with pre and post measures to guide decision on outcome of programs. New techniques must be worked out to record and analyze the complex observations and judgements which form the raw material of "programs" in the real teaching situation.

The total process -- from definition of goals through structuring of language to evaluation -- needs further review to ensure planned progress.

20 Parents' Views on Their Language-disordered Children

20.1 The Background of the Parental Interviews

The basic philosophy of this report is that the same data should be looked at from several different points of view. An important viewpoint is that of the parent. The research team visited in their homes and interviewed 28 families with a language-handicapped child. These interviews took place in June, July and August, 1976, when school programs had closed down. Each interview was based on a 16-item questionnaire which allowed most responses to be coded as Yes/No, or classified, but also encouraged free response from parents.

20.2 The Location of the Children

The 28 children were, in the main, from day educational programs observed by the research team as part of the main study. These programs were: Bedford Park Public School, Toronto program for language-disordered children; the Churchwood Developmental Centre (Windsor) for developmentally handicapped children; the Andrew Donaldson Developmental Centre, Brantford; Lingarden School for Trainable Mentally Retarded, St. Catharines; Chedoke Hospital (Hamilton) nursery program for language handicapped children; Edward Johnson Public School, Guelph unit for autistic children; Prueter Public School, Kitchener unit for autistic children; Rotary School (Trainable Mentally Retarded) Toronto research program on autistic children, and a number of elementary or secondary school programs in Toronto (2), Richmond Hill and Thornbury (2), and Hamilton (1).

The sample of children therefore was drawn from the range of geographical areas and kinds of program which are represented in the main study.

20.3 The Age and Sex Distribution (Question 1(a))

Where recorded, the age range of children was similar to that in the main study, that is, from 5 to 13. Years of age were as follows: 5 years (1), 6 years (2), 7 years (2), 10 years (2), 11 years (2), 12 years (2), 13 years (2). The mean age was 9.4 years.

The comment was made "where age was recorded". This provides an interesting observation. The interview schedule had an entry (Question 1(a)) which asked, "How many children are there in your family?" and asked for their age and sex. In 15 instances, the parent in reporting the number of children in the family, did not include the child who was the subject of interview. The interviewer also was not aware of this omission at that time. What is the psychological meaning of this? For full information on these children's ages, it is necessary to go back to school records in the main study. The above information on age is based on the 13 full records.

There were 19 boys and 9 girls. This is the kind of sex difference found in analysis of the main study, but with a slightly greater incidence of girls (1:2 instead of 1:2.25 or higher).

20.4 The Characteristics of the Children (Question 15, 16(a))

The total group of 28 was classified as: children who were by diagnosis or placement clearly autistic; students in the Bedford Park program and therefore likely to be severely language-handicapped or aphasic; children who were in developmental centres or schools for the developmentally handicapped (mentally retarded) and others who were in a variety of special programs in public elementary school, or in one instance, secondary school.

Evidence from the questionnaires and interviews, as well as what is known of these children in their programs, shows that a significant proportion of the children from developmental centres have autistic tendencies and/or severe language and speech disorder of the kinds dealt with in programs for the autistic and aphasic. Also, the children from the elementary school programs showed evidence of autism or severe language disorder.

Numbers were as follows:

Autistic - 4
Bedford Park, language disordered - 8
Developmental Centres, etc. (mentally retarded) language disordered - 11
Other (elementary special programs for language disorder) - 4

The last question in the interview was "Did your child's competence in language develop according to his age level?"

The answer is clear. Except for three cases in which the answer was not given, every child had failed from an early age to develop normal competence in language.

Therefore, this is a 100 per cent sample of children with severe language delay or disorder, whatever diagnosis they may have been labelled with, and whatever placement they are in.

Examples of parents' comments are: (Developmental Centre) "Spoke only at 18 months and had unclear speech / early verbalization did not develop after a fall at 14 months / spoke a few words at 2 years and non-verbal at 2½ years / still babbling at 18 months, then regressed in language / said only "Mom" and "Dad" but no babble or words / good speech until 3½ years then stopped - speaks in short sentences now / speech always behind".

(Autistic) "Classical autistic, echolalic / verbal only by 5.9 years / was 2 to 3 years before talking / was 3½ to 4 years before talking."

(Bedford Park aphasic) "no early sounds / only 5 words at 3 years / loss of speech or failure to develop following early convulsions".

This is a classical language-disordered group as described and analyzed in the main study. It has all the variety and heterogeneity of the language-disordered group.

20.5 Family size and structure (Question 1(a))

The mean was 3.1 children per family. This appears quite high average family size. Family size differed between groups.

The Autistic group had 2 families of 2 children and 2 of 3 children, i.e. 50 per cent of each, mean of 2.5. They were the group with smallest family size.

The Developmental Centre group ranged as follows: 2 children (5), 3 children (3), 4 children (1), 5 children (2), i.e. 45 per cent of families contained 2 children but there were 27 per cent with 3 and 18 per cent with 5 children. The mean was 3 children.

The Bedford Park sample had the following range: 2 children (1), 3 children (4), 4 children (3), i.e. 50 per cent of families had 3 children but only 12 per cent contained 2 children. The mean was 3.25.

The "Other" group had 3 families of 3 children (50 per cent) and 2 families of 4 children (50 per cent), i.e. a mean of 3.5.

It is of interest that the Autistic sample had the smallest family size. It has been found in previous research studies that parents of autistic children tend to be drawn in greater than chance proportion from higher educational and professional levels and that their families are likely therefore to be smaller.

The larger family size of the Bedford Park sample is interesting. It tends to confirm the impression from other information, that children entering this program are from larger families, with fewer educational and socio-economic advantages, and are likely to have other handicaps in addition to their language handicap.

Family size is known to be negatively related to the levels of children's intelligence and progress in school, and tends to be positively related to lower educational and socio-economic status.

Unexpected results are brought out in comparing the composition of families, i.e. how many boys and girls they contain.

The answer is clear. In total, these families contain 53 boys and 34 girls. This higher incidence of boys is far above the chance level (chi square 90.25). Even more striking is the comparison of families in terms of whether they have equal numbers of boys and girls, more boys or more girls. There are many more families where boys outnumber girls:

Families where boys equal girls in number - 7

Families where boys outnumber girls - 15

Families where girls outnumber boys - 6

If it is assumed that the number of families where there are more boys should be roughly equal to the number of families where there are more girls, it is clear that the above distribution is unlikely to occur by chance (chi square 11.25).

It seems that in families where there is a child with a language handicap, that family is likely to be composed of a majority of boys. Whatever the reasons for this, it seems likely that families with a majority of boys will usually require more care and management, will be more vulnerable in terms of all kinds of handicap and (relevant to the present study) be likely to provide a lower level of language development, or stimulation, especially when young.

20.6 Disabilities of Other Siblings (Question 16)

Parents were asked if children, other than the one in question, had significant disabilities. Seven of them did, i.e. 28 per cent of families. This seems to be slightly above the level expected by chance. The greatest number of siblings with handicaps was found in the Bedford Park group (3/8), next greatest in the "Other" group and Autistic (1/4) and least in the Developmental Centre group.

Handicaps in the Bedford Park sibs were mainly physical, e.g. spinal complaints such as scoliosis, hypotonia and tuberous sclerosis. Among the Autistic, the handicapped sibs were retarded/autistic; among the Other, and Developmental Centre groups, the affected sibs were slow learners, i.e. slightly mentally retarded or had speech/language difficulty.

This is very slight evidence; it is open to question whether there could be a genetic, a familial or simply an environmental-social effect. The familial/environmental effect seems more likely.

20.7 Number of Previous Placements (Question 3)

In the main study, an analysis was made of the variety of diagnoses for each child and the number of previous placements in which he had been put. The assumption was that, the more severely handicapped the child or the more difficult to assess, the more placements he might have been in.

In the whole group, placements were as follows:

	No.
0 (first placement is present one)	10
1 previous placement	6
2 previous placements	7
3 previous placements	4
4 previous placements	1

The mean is 2 previous special placements. This is lower than the average for the main study (Chapter 14).

There was a distinct difference in pattern between the groups.

Developmental Centre/Other	Autistic/Bedford Park	
15	8	had 0 to 2 placements
0	5	had 3 to 4 placements

The children with more severe language (and other learning handicaps) such as needed placement as autistic, or in the Bedford Park language program, also had a larger number of previous placements. This was especially so for the Bedford Park children (4 with 3 or 4 previous placements).

It seems more difficult to establish the correct diagnosis or to find appropriate programs for a child with severe but unclassified or undiagnosed language disorder.

The comments of parents are interesting. The Autistic group reported the following:

(a) placement in Thistletown Regional Centre for 21 months before entering present class;

(b) Clarke Institute program, Cecilia Smith Nursery, McCordic School and individual tutor before entering the present resource;

(c) West End Creche and Clarke Institute programs;

(d) Carol Currier nursery for retarded, Hespeler Pre-school for Handicapped;

(e) co-operative nursery and Clarke Institute.

The Developmental Centre parents reported mainly placement in the developmental centre for the retarded, nursery for the retarded, and the Integra program. The Bedford Park parents reported that children went through a variety of programs, as if there was a search for the appropriate diagnosis, i.e. (a) Cecilia Smith nursery, conventional nursery, kindergarten; (b) Clarke Institute (Toronto), Hearing Centre; (c) Surrey Place (Mental Retardation) Centre, Sunnyview School for Crippled; (d) Buffalo speech and hearing facility, nursery, Bayview Glen private school.

The occurrence of evidence for this "search" pattern confirms the comments of a parent (Browning (1972)) who described the difficulties of obtaining appropriate diagnosis and placement for an aphasic son who was perceived as being hearing-impaired, behavior-disturbed. At the end of this chapter, these difficulties are also dramatically described in the personal account of a parent's search for appropriate placement for his son.

The "Other" group, which other evidence suggests contains children of rather lower intellectual/educational ability, had been in a children's diagnostic centre, Burlington, special classes for slow learners or kindergarten.

20.8 Parents' Hopes for Program Outcome for Their Child (Question 4)

Parents were asked a crucial question: "What do you, as parents, hope or expect for your child in terms of program outcome and re-integration with the community?"

Classification of the answers showed that the main concern (8 responses) was that the child should cope, develop adaptive and self-care skills (4) or become independent (4). The second major concern is the improvement of language and speech (7 responses). Four parents hope that the child will make an acceptable living, support himself, or become a good citizen. Only 2 emphasized the acquiring of better basic academic skills, and 2 hoped that their child would become completely normal in ability/achievement.

Improvement in behavior received only 1 response. Among the Autistic group, 50 per cent of parents omitted this question. The parents of children in the Developmental Centre, not unexpectedly, emphasized the need for self-care, adaptive behavior, or making the best use of the care provided; parents of children in the Bedford Park program emphasize making a suitable living and improved academic skills, as did the "Other" group.

Parents were asked a related question, whether they hoped that their child would be returned to the regular school system. (Question 5)

Sixteen expressed the hope the child would improve enough to return to the regular school system; 8 thought this unrealistic. Even those who expressed the hope indicated that it was hope and often unlikely to be realized. It is of interest that three-quarters of parents of autistic children expressed the hope that the child would return to the regular school system, although other evidence suggests that the child is severely handicapped and is unlikely to make the degree of improvement necessary. This group is the least realistic in this particular respect.

20.9 Parental Liaison/Involvement with the School Program (Question 6(a))

The degree of involvement of parents in the school program, and in extending the program into the home, is a measure of the acceptance and effectiveness of the program. In total, half the parents considered that involvement with the school program was good (14) and half that it was poor or restricted. This is not flattering to the school program.

The percentages of positive response ranged as follows: "Other" group, i.e. elementary school special classes, 75 per cent; Autistic 60 per cent; Bedford Park 50 per cent; Developmental Centre 34 per cent upwards.

The apparently poor parent-school liaison in the Developmental Centres is unexpected, since it might be thought that parents and centre would have to work closely and consistently in helping young severely handicapped children. The proportion of comments indicating little or unspecified involvement between school and parent in the Bedford Park program is also surprising since importance is attached by the school to reporting to parents, and the school retains a part-time social worker. There seems to be a marked contrast here between parents who report close and valuable co-operation, e.g. with teachers and speech pathologist, and those who report that there is no such relationship, and that distance and travelling time, in a large metropolitan area, make school liaison inconvenient.

The means of liaison was mainly through parents and teachers meeting regularly, and teachers reporting (5), and by parent-teacher groups (3), to judge from the responses of the Developmental Centre.

Simple reporting by teacher, involvement in fund-raising activities, and formal meetings of P.T.A. seemed to be related to unsatisfactory liaison, e.g. comments that the P.T.A. was irrelevant, or that meetings were conducted in language above the parents' heads. Effective liaison must be direct, in a frequent, consistent, and democratic way between teacher and parent.

20.10 Do Parents Get Involved in Continuing the Program at Home? (Question 6(b))

Parents were asked the complementary question, whether they felt they were involved in the program to the extent of continuing it in some way at home. Again the answers split, with half giving positive (13) and half negative or non-committal responses (14).

Proportion of positive responses in different groups was as for the previous question. "Other" elementary school classes, 75 per cent; Autistic and Bedford Park, 60 per cent, and Developmental Centre, 20 per cent. The Autistic group reported working at home on sign language, work schedules, and behavior modification routines. The Bedford Park group reported two instances of behavior-modification but more emphasis on academic skills such as reading, spelling, writing (4). As expected, the Developmental Centre parents referred to more basic self-help skills such as dressing and learning to do simple home tasks. These may be perceived as not so much an extension of the school program as what the home would do in any case.

20.11 How Well-informed are Parents Kept by School? (Question 7)

An issue of crucial concern to parents is how well-informed they are kept on the results of assessments, reports, counselling, and the progress of the child. On the whole, information was felt to be good or fair, i.e. in 18 of the 28 cases. However, it was felt to be poor or lacking in 9 of the 28 cases (33 per cent). This is too high for complacency.

The proportions of positive response were: Bedford Park, 80 per cent; "Other" group, 75 per cent; Autistic, 60 per cent; and Developmental Centre, 55 per cent. The claim of the Bedford Park program that it sets up conditions to keep the parents informed is confirmed by this sample of parents. However, when there is criticism of poor information in one instance, it is severe.

The Autistic program parent who criticized the lack of information referred to getting only report cards and failing to obtain much satisfaction from the teacher of the class in which her child was placed. Despite the lower level of satisfaction in the Developmental Centre group, there were references to receiving reports monthly to three times per year, monthly meetings, and effective P.T.A. organizations among those who felt there was good communication.

20.12 When Did Parents Discover Their Child Was Handicapped? and How Easy Was It to Get Information? (Question 13)

Parents are vitally concerned with another issue -- what information they were able to obtain about what was wrong with their child, and about programs appropriate to his/her handicap.

Parents were asked when and how they discovered their child's handicap. The distribution of ages, where this was given, was, in total:

	No.	Per cent
Unreported	3	10
at 1 year of age	6	20
at 2 years	9	30
at 3 years	5	17
at 4 years	2	8
at 5 years	2	8
at 6 years	1	4

In other words, language handicap appears in a form which is significant and distinguishable by or before 4 years of age. The diagnosis should be made much earlier, i.e. at 2 to 3 years of age. Groups differed in the age at which the child was recognized as handicapped. The Autistic group reported 1 at 1 year of age and 2 at two years of age.

By contrast, the Bedford Park parents reported: at 1 year of age (3); 2 to 3 years of age (2); 3 to 3½ years of age (2); but at 6 years of age (6), i.e. a much later diagnosis, which reflects the difficulty in deciding on what is the handicap of a child with severe language delay or disorder.

The Developmental Centre group fell between these extremes: at 1 year of age (1); at 2 years (3); at 2½ to 3 years (3); at 3 to 4 years of age (1) and at 4 to 5 years of age (2).

In the total group, 4 were diagnosed early as autistic, two were diagnosed as handicapped following convulsions. In the Bedford Park (language disorder/aphasic group) reference was made to the effect of early convulsions (at 1 to 1½ years) in arresting language development, and to hydrocephalus. The autistic were the most clear-cut, with references to early failure to acquire language (by 2 years of age), lack of appropriate attention to parents, walking late and not smiling, screaming continually, sleeping problems and head-banging by age 2. The Developmental Centre children mainly failed in acquiring language, or were generally delayed in motor skills, but the "autistic" children revealed bizarre behaviors such as rocking, spinning and flapping hands, or good memory despite not talking or responding.

Parents gave a fair amount of detail concerning the way in which the handicap was identified and by whom. There were two distinct groups: those who felt they had been helped by professional advisors, readily obtaining information, and those who felt that there was considerable lack of information, if not incompetence, in assessing the precise handicap of their child.

20.13 How Easy, or Difficult, Was It for Parent to Obtain Information About Programs for Autism, Speech Disorder, etc. (Question 9a, b)

Only 12 reported that it was easy to get an appropriate diagnosis and guidance on placement -- 16 reported having difficulty.

Among the Developmental Centre parents, 55 per cent found getting information easy; of the Autistic group, 40 per cent, but among the Bedford Park parents, only 25 per cent had found getting information on correct early diagnosis and available programs easy. This was also true for getting information on young children who later entered the Bedford Park program. Once again, this underlines the difficulty in present circumstances of getting precise, correct, early assessment of the handicaps of young children with severe language disorder/aphasia.

The comments on the medical, social, and educational services were, on the whole, critical. Comments were made to the effect that general practitioners were ill-informed about language and developmental handicap, that there was a lack of information on autism, that information was obtained from other parents or from a television program or brochures, rather than from medical or social-service professionals. Reference was made to the difficulties parents had in following up on information from one source to another, i.e. the need to persist and keep asking questions. Information, where available, came from the general practitioner, a doctor in a general or specialized hospital facility (usually the latter), the public health service or (when the child arrived at school age without correct diagnosis) the board of education staff. As perceived by parents, no one source seemed most important or, indeed, particularly effective. Doctors, including paediatricians, appear not to play the role they might be expected to in informing and guiding parents on early handicap.

The actual breakdown of sources is:

Learned from family contact or other parents	3

Public Health nurse	2
Developmental Centre/school staff	4
Hospital/own doctor	3
The Autistic Society	2
Board of Education	3
Other professionals	2
Speech pathologists	2

The Developmental Centre parents appear to have come off best, since they were given information on programs early by public health nurses who saw the child, or had help from the developmental centres to which the child was likely to go. General practitioners and paediatricians figured twice in this list of eleven respondents.

Where these had contact with the family, the parents praised the contribution of the public health nurse in early assessment and support. Speech pathologists also, in relation to their number and likelihood of encountering parents,received positive responses.

There is too much evidence that parents have to rely on incidental or haphazard sources of information, i.e. networks such as friends, other parents, public information programs or membership of the Autistic Society (which, in turn, is dependent on chance, and the realization that this society exists to help with this particular handicap). On the other hand, when parents encounter someone knowledgeable, they usually find that this advice has been sound and very helpful. One parent, prominent in the affairs of the Autistic Society, had high praise for the staff of the clinic centre her child attended at an early age, and the value of the Autistic Society.

20.14 What Emphasis in the Program is Perceived as Most Valuable? (Question 8)

Parents were asked what emphasis they perceived as valuable in the programs their child was in. The answer is clear:

Life skills/social competence rated 17 responses, followed by language (13). Other emphases perceived in the program were much less important: a balanced curriculum (6), dealing with academic skills (5) and motor/physical skills (4).

This reflects the same themes as in Question #4, analyzed earlier, which asked what parents hoped for in the program. It will be recalled that in the analysis of teachers' goals and perception of the content of the program, in the chapter discussing curriculum and program, it was found that teachers attached high priority to achieving adaptive skills and social competence as well as to improving language, but that emphasis on academic content such as reading, writing, and math, was also high in programs for children with language handicap.

20.15 Suggested Improvements in the Program (Question 10)

Five parents said they could suggest no improvement, and others said they did not feel in a position to make comment. This response implies satisfaction. Where improvement was suggested, the themes were as follows:

Better student/teacher ratio, i.e. smaller teaching groups and more one-to-one instruction - 8 respondents

More competent teachers/consistent teaching - 5 respondents

More academic skills - 4 respondents

More/better parent information - 4 respondents

More language - 1 respondent

More physical/motor skill training - 1 respondent

Better integration of programs - 1 respondent

Better transportation of children - 1 respondent

Basically, parents perceive the effectiveness of the teacher as being more important than the content of the program -- or rather, perceiving the effectiveness and value of the program as being dependent upon the teacher's presentation of it, i.e. competence.

They see more value in a more intensive teacher/child ratio and an increase in the opportunity for one-to-one relationship and instruction than in content of the curriculum as such. In this respect they are right and are echoing, as parents, what the perceptive educator, such as Kleffner, and others, have said about the need for intensive individual work in helping language-handicapped children. It is also of interest, repeating a theme constant in this chapter, that parents emphasize the importance of adequate information about the child's progress, and of communication with themselves.

The need for academic skills is rated relatively high by parents, and by teachers as shown in the previous chapter. Analogy may be drawn, respectfully, to the Gospel according to St. Luke (King James Version) Chapter 12, Verse 31; to paraphrase -- seek first for competence in language/communication and academic skills are more likely to be added to this primary competence.

Language receives a disappointingly low priority, probably because it forms a major part of the existing program and is, presumably, perceived as satisfactory. One very perceptive and realistic mother suggested, in a personal communication, that there might be too much emphasis on teaching spoken language to autistic children who find the task very difficult and are not likely to use spoken language in any but rote responses.

20.16 Do Parents Feel More Competent in Dealing with Children as a Result of Program? (Question 11)

Parents were asked if they felt more competent in dealing with their child at home as a result of the program in which he was involved. The majority (17) felt competent, but a substantial number (10) did not, or felt that what competence they had in dealing with the child owed little to the school program.

In comparison of groups, the Bedford Park parents had the highest proportion (75 per cent) of positive responses. They were followed by the Developmental Centre parents (7/11 or 63 per cent) positive response. The lowest were the "Other" group (2/4 or 50 per cent); the Autistic group (2/4 or 50 per cent).

20.17 The Home Activities Related to the School Program (Question 12(a))

The kinds of activities related to the program which the child engaged in at home were: None or unreported - 6 responses; academic (workbooks, reading, writing, spelling) - 15 responses; physical/motor skills - 4 and self-help - 1. Of the Autistic group of responses, two refer to some academic aspect of curriculum; of the Bedford Park group, 10 refer to reading (5) or other aspects of basic skills (5). The Developmental Centre parents, as expected, reported more sensori-motor/manipulative activities such as puzzles (3), some self-help and reading.

There is clearly an underlying concern on the part of parents that children should, if possible, have access to appropriate experience/training in the formal academic skills -- though it is also true that for many of these children (e.g. Autistic and Developmental Centre groups) a high level of academic skills is unlikely to be attained and is of problematic value to the child until he has achieved social integration and effective adaptive/self-help skills.

20.18 What Background (Professional) Information on Their Handicapped Child Do Parents Possess? (Question 15)

Finally, parents were asked to indicate what background information (medical, psychological, educational) they possessed. The majority (19) reported more or less satisfactory possession of appropriate information, but a substantial minority (9) considered this information was missing, poor, or incomplete. Reported completeness of information ranged from 80 per cent (Autistic); 75 per cent (Bedford Park and Other) to 55 per cent for Developmental Centre parents. Once again, the pattern emerges of the Autistic parents on the whole being given adequate information and assessment -- at least, in the long run, and the Developmental Centre parents feeling that their children's developmental retardation or other handicaps have not been satisfactorily explained.

In the Autistic group, reference was made to reports by family doctor, paediatrician, psychologist, psychiatrist, and neurologist (in differing combinations, i.e. a number of separate or overlapping and repeated sources of assessment). In the Developmental Centre group, those who gave positive responses referred to similar patterns in two cases, i.e. information from general practitioner, paediatrician and psychologist, or Hospital for Sick Children (Toronto) and C.P.R.I. Children in the Bedford Park program had passed through a variety of assessment procedures, as noted, in the search for appropriate description and diagnosis viz. the Clarke Institute of Psychiatry, Surrey Place (Mental Retardation) Centre, paediatrician, neurologist, speech pathologist.

There is clearly no standard route which assessment follows, nor standard set of information available. Some parents get a considerable amount; others feel that they have little or that what they do have is insufficient or unreliable.

20.19 Pregnancy and Birth Conditions Relating to the Handicapped Child (Question 16(a)

Parents were asked to comment on the course of pregnancy and the birth history of the child, since these stages are often those in which handicap is first caused or perceived. There is an interesting contrast between the reasonable completeness of the information given by parents and the sketchy nature of the information on prenatal and perinatal factors available to school programs as revealed by the statistical analysis of the main study.

In reporting the course of pregnancy, mothers recorded 17/28 normal or uneventful pregnancies. The remainder reported facts which may or may not have affected the course of pregnancy: rubella in first month (1) Toxaemia or haemhorrage (2), severe chronic sickness (1), car accident, cracking mother's pelvis, etc. (2), disturbed placenta (1), severe seizure in mother (1), severe urinary infection (1).

Seventeen mothers reported normal deliveries. There were four premature deliveries, six difficult or prolonged deliveries.

Comparing groups: the Autistic and Developmental Centre parents reported 80 per cent normal deliveries, the "Other" group 75 per cent normal, and Bedford Park group only 40 per cent normal. The relatively high birth risks which seem to be associated with the Bedford Park children are consistent with the impression that this is a group which may have physical and neurological as well as general developmental handicaps.

20.20 What Changes Have There Been in the Family as a Result of the Child's Handicap? (Question 14)

One of the most important issues, from the parents' point of view, is the degree to which they can handle the child's handicap and the extent to which it imposes change or stress on themselves and other children. It was felt that there had been changes in family relationships/behavior as a result of the child's handicap in 17 cases but not in 11 cases. Where there were effects on the family, these may be positive or negative.

The negative effects were in stress on parents or the child's sibs e.g. arguments between parents on handling (1), other children resenting the extra attention given to the handicapped child (4), demands made for considerable time in stimulating or supervising play, etc. (5), restrictions on social life of parents (2), creating anxiety and stress in mother (1).

On the other hand, positive effects were noted: the family is closer (2), more patient (1), sibs more concerned and helpful (1). On the whole, however, where there was observed change, it was in the direction of much greater demands and stress on all family members. Where change was not noted, this was positive, i.e. the comment was made that the child was accepted (1), other children accepted their handicapped sib (3).

The degree of change in family was about the same for all groups: 63 per cent reported for Bedford Park parents, 60 per cent for Autistic, 50 per cent for "Other", and 45 per cent for Developmental Centre.

There was no direct evidence on this, but the above pattern of results suggests that the adjustment/adaptation of the family to the considerable stress imposed by a severely handicapped child depends on the composition of the family, personality and education of the parents, happy relationships with other children in the family and their capacities to adjust or compensate. There is little indication, from the parents' reports, that organized specific steps are taken, e.g. by professional advisors, school, or other sources of support, to enable them to cope more effectively.

20.21 Relationships Between Questions in the Survey

The results reported are based on straight frequency counts; the sample is too small to analyze by age, sex, etc. Cross-tabulation of those items (Questions 3, 5, 7, 9, 11, 16) which gave unambiguous Yes/No divisions as well as descriptive comment indicate that there are some significant relationships (chi square).

Specifically, Question 3("Has child been in other programs before present placement?") had a significant relationship with #6 and #16 i.e. positive evaluation by parent of involvement with school program; and normal birth history (pregnancy).

Question 3 also had near-significant relationships with #7, 9(a), 11, 16(b), i.e. how informed the parent is kept by the school; how easy it was to obtain information about programs for language-disordered children; how competent the parent feels in dealing with the child as a result of the program; and normal birth (pregnancy).

Question 7, how well informed the parent is kept by school, had a significant relationship with #11 and 16(a), i.e. how competent the parent felt in dealing with the child as a result of the program; and normal birth (pregnancy).

Question 9(a) (How easy it was to obtain information about special programs) had significant relationships with #11 and #16(a) in the same pattern as #7. Questions 7 and 9 are not, however, related, i.e. obtaining information from the school on the child's progress is not related to how easy it was for the parent to obtain initial information about suitable programs for the child's handicap.

Question 11 (Does parent feel competent in dealing with child as a result of program) is related to #14 and 16(a), i.e. whether there have been changes in the family as a result of the child's handicap; normal birth (pregnancy).

Questions 9 and 11 (How easy it was to obtain information about appropriate programs; does the parent feel more competent in dealing with the child, etc.) are significantly related. It seems likely that this relationship is due to other factors -- the education, interest, knowledge, personal connections or other advantages of particular parents which make it more probable that they will (i) more readily obtain the right information/guidance and (ii) use more effectively the help they get from the program.

There seems no obvious reason why normal birth/pregnancy as such is associated with other positive factors in parental attitude or knowledge.

20.22 Confirmation by the Mail Questionnaire Sample

The main conclusions based on the individual parental interviews were confirmed by an analysis of 24 questionnaires which were mailed to a larger number of parents across the province in the summer of 1976.

A random sample of 24 questionnaires was analyzed. It was found that questions 4, 7, 8, 10, 14 and 16(a) were somewhat open-ended for use outside a direct interview situation. Other questions, 1(a), 1(b), 3, 5, 6, 9, 11, 15 and 16(b) had a high response rate and presented no difficulties of interpretation.

Over all, the responses given in the mail sample were slightly more positive in evaluation of parent-school relationship, getting information, or being involved in program.

For economy of presentation, the analysis of responses is given for each question, with brief comment.

Question 16(b) The Language Handicap of Children

Eighteen (75 per cent) of children had not developed language competence according to age level; 3 (12 per cent) had. These children are significantly language-handicapped, like those in the interview sample. This is confirmed by the early age at which language handicap was discovered. (Question 13)

Question 1(a) Total Number of Children in Family

The median/mode was between two and three.

Question 1(b) Do your other children have any disabilities?

"No" 21 (87 per cent). Of the 3 "Yes" responses, two were physical and one mental disability. This is similar to the interview sample.

Question 1(c): Is the candidate one of a pair of twins?

This question was not asked in the interview. In this sample, no child was a twin. "Not available" responses totalled 19.

Question 3: Was your child in other programs prior to present placement?

"Yes" 20 (83 per cent). Of these, 13 (54 per cent) had been in one other placement, 5 (21 per cent) in two other placements and 2 (8 per cent) in three other placements. This resembles outcomes of interview and the statistical analysis of the major study.

Question 4: What do parents expect/hope for the child in terms of program outcome and re-integration with the community?

	No.	Per cent
Total integration into a regular school	5	21
Able to hold simple productive job	4	17
Able to take care of self	3	12
Learning basic academic skills	3	12
Able to communicate effectively	3	12
To be a happy person	3	12
Other	6	25

As in the interviews, the emphasis is on life-adjustment and personal skills; there is a realistic perception that the child is unlikely to be returned to the regular school system.

Question 5: Do parents hope child will be placed in the regular school?

The "yes" answers totalled 14 (58 per cent). As in the interview sample, many more parents *hoped* for such an outcome than realistically *expected* it.

Question 6: How much involvement do parents have with the program?

At school - 11 (46 per cent) said they were involved. 7 responses were not available.

At home - 16 (67 per cent) said they were involved. 4 responses were not available.

Question 7: How informed are parents kept by principals, teachers and therapists?

a) Some indication of a positive parent-school relationship - 20 (83 per cent)
b) When type of relationship was described: 12 (50 per cent) were "excellent"; 7 (29 per cent) were "good/fair"; 4 (16 per cent) were "poor". These answers are distinctly more positive than the interview sample.

Question 8: What emphasis is the program perceived as facilitating?

	No.	Per cent
Language	16	67
Social	12	50
Motor	9	37

5 responses were "not available"

Two parents added "academic skills".

Question 9: how easy or difficult was it to obtain information about programs?

	No.	Per cent
Easy	12	50
Difficult	6	25
Not available	6	25

This is a more positive set of responses than in the interview sample, but still indicates a significant number with dissatisfaction.

Question 10: What improvements would parents like to see in program?

	No.	Per cent
No change; satisfied	6	25
More social skills	3	12
More integration with regular students	3	12
More language/speech	2	8
More behavior training	1	4
More feedback & parental involvement	1	4
Other	8	33

Among the "Other" responses, several parents mentioned the need for smaller classes.

The emphasis on adjustment and integration recurs here; as before language/communication is not one of the priorities.

Question 11: Do parents feel competent in dealing with child at home as a result of the program?

"Yes" responses totalled 19 (80 per cent). Three were "not available". This is a much more positive response than in the interview sample.

From the responses, it appears that 6 parents (25 per cent) consider parent-child relationships to be excellent; 12 (50 per cent) consider them to be satisfactory and 2 (8 per cent) consider them to be poor.

Question 13: When and how did parents discover the child's handicaps?

When?	No.	Per cent
Infancy	6	25
1 - 2 years	2	8

2 - 3 years	4	16
3 - 4 years	2	8
Up to 6 years	2	8
Not available	8	33

Therefore, a third of parents were aware their child had a handicap by the time he was beginning to establish language (infancy to 2 years), and 57 per cent were aware of the handicap by the time the child was 4 years of age (when language would normally have been fully established). However, these findings confirm that only about half of children who later turn out to have severe language handicap are identified before the age (4½ years) at which the handicap is already significant and obvious and likely to be exerting a marked effect on the child's development. These findings confirm those of the main survey, that a majority of children are not diagnosed and/or placed until of school age.

How?	No.	Per cent
Language did not develop	7	29
Behavior different	3	12
Delayed milestones	2	8
Hearing problem	1	4
Not available	12	50

The high proportion of "not available" responses implies that the parents did not have the information or were not aware of its significance.

Question 14: Have there been any changes in the family in consequence of the child's handicap?

"Yes" responses were 9 (37 per cent) but the majority claimed there had been no change - 12 (50 per cent).

The changes were mainly problems or need for adjustment, and only two positive changes were noted.

	No.	Per cent
Social/emotional problems	5	21
Marriage difficulties	3	12
Family home relocated	2	8
Greater expectations of sibs	2	8
Special allowances have to be made	2	8
Positive changes	2	8
Not available	5	21

This finding confirms the finding of the interview sample that having a handicapped child often imposes considerable strain, or needs for readjustment, on a family.

Question 15: Do parents have any background information?

"Yes" 11 (46 per cent); "No" 6 (25 per cent). "Not available" responses totalled 7. This is not a particularly satisfactory finding.

Of the parents who commented on the number of referrals/diagnoses of the child which had been made:

Number of referrals	Frequency	Per cent of 24 cases
1	4	16
2	4	16
3	1	4
4	1	4
5	1	4

This is the kind of range in number of referrals/placements observed in the main study.

Question 16(a): Please comment on the birth history and early development.

	No.	Per cent
Normal pregnancy and early development	7	30
Delayed milestones	5	21
Normal milestones	3	12
Normal until an illness of child	3	12
Normal until accident/trauma	1	4
Prenatal difficulties	1	4
Prematurity	1	4
Perinatal difficulties	1	4
Downs syndrome	1	4
Language delayed	1	4

Within the limits of variation found in small samples, this resembles the findings of the interview sample, though the children in this sample appear to have fewer birth or early developmental difficulties. It is of interest to contrast these findings with the findings of a distinctly higher incidence of prenatal and perinatal difficulties in language-disordered groups, in particular autistic groups, in the main statistical analysis.

20.23 SUMMARY

Parents obviously varied considerably in their attitudes and perceptions of the different aspects of their problem. They had apparently experienced remarkably different degrees of support and amounts of information. Some have had good experiences in getting children diagnosed, finding appropriate programs, getting good professional advice and maintaining good relationships with the school. They are well endowed, aware of what resources to tap, or just lucky. For example, three parents in the sample were senior officers in three different chapters of the Ontario Autistic Society and therefore likely to have markedly above-average interest and knowledge. Two reported satisfactory or excellent response to various aspects of their problem; the third expressed considerable criticism of the way in which the child had been identified and diagnosed, and had strong reservations about contact with the school program under the teacher then in charge, who has since moved.

Also, at the other extreme, is the mother who expressed the feeling that she had received little information or help in establishing what her child's handicap was and felt that parent-teacher meetings were "above her head". Clearly, much that is positive is expressed in these interviews towards professional services, the school program and liaison with the school. There are, however, sufficient negative comments to ensure that there are no grounds for complacency.

20.24 The following appendix to the chapter on parents' views represents the personal views of one father of a child with severe communication disorder. It is of interest that the efforts of this father to initiate research which would be of benefit to his child probably contributed directly to the setting-up of the present study.

The account is in his own words. It provides a comparison with the account given by Browning (1974) of her aphasic son. The reader might also wish to compare the present account with "Nadia" by Lorna Selfe (Academic Press 1977) since Nadia also showed the extremely gifted visual perception and drawing ability manifested by M. in the following account.

APPENDIX TO CHAPTER 20

ON HAVING A LANGUAGE-IMPAIRED SON . . .

By J.K.E. (Parent)

Looking back, seeking to portray M. and his relationship with the family, with friends, and with all who have had a significant bearing upon his life, one invariably starts thinking, "Would things have been different if.... ?"

I'm sure that one thing that all parents of language-handicapped children over the age of twelve have in common is the thought, "My Johnny (Susie, or Whoever) would be much farther ahead today if I had known then what I know now!"

On the other hand, one of the most encouraging improvements that have occurred during that time is that the agency and institutional people dealing with these children are now prepared to admit to the same thing.

With M., of course, there was a lot to learn. He is now generally accepted as unique even among his peers, who are individualists enough; but even at that the above thought still holds true -- things would have been so different if . . .

For me, the most telling evidence of this came following his admission to the Thistletown Day Treatment Program at the age of 13½. Prior to his acceptance to that program the authorities concerned requested an up-to-date assessment, and M. spent five days at the Hospital for Sick Children, at the end of which the report varied little from that issued at his first assessment at age 6 and repeated periodically throughout his years: Hard of Hearing and

Aphasic; with overtones of Autism, Schizophrenia, and Emotional Disturbance. This time, however, there was greater emphasis upon his "communication problem", and the School informed us that they had decided to concentrate their efforts on this aspect (of which they had no previous experience), relying on their established expertise to deal with any behavioral problems if and when they occurred. (M. had recently been demitted from two schools in one year for unacceptable behavior.)

The outcome: At Thistletown's first staff assessment-meeting, three months later, it was agreed unanimously that there had been no behavior to justify the labels Autism, Schizophrenia, or Emotional Disturbance: that all of his non-conformist modi operandi derived from his communication failure.

I had long been inclined to a belief along those lines, but this was far more sweeping than I had ever contemplated. However, looking afresh at our expectations of M. and our dealings with him accordingly; along with our recollections of past successes and failures; it made a lot of sense. It gave rise immediately, for instance, to another "If only...." -- If only we had learned, as a family, to converse in sign language from the beginning!

Certainly his rapid improvement in all directions commenced at Thistletown Day School, and seemingly stemmed directly from the one-to-one relationship with his teacher, who, knowing no sign language, was strictly on a par with M.'s communication abilities and had to converse with him at his level in consequence.

For the past two years since then M. has been attending E.C. Drury School (for the Deaf) at Milton where they have tried to follow a similar approach, but with a teacher/student ratio of around 1:4 at best, and with a greater stress on academics, M.'s progress is far less marked. The emphasis on shop-work as opposed to the arts and crafts at Thistletown has proved less stimulating in terms of both production and design.

However, their efforts with him in social behavior have borne fruit, and this summer we were delightedly surprised when he was voted Camper of the Year by the Counsellors at the Iron Butterfly, his summer camp in Scarborough. Again I feel that there is added significance in the fact that the camp is organized for all forms of handicapped (especially physical), and M. is, in that company, the least disadvantaged in almost all activities. He is therefore encouraged by both the counsellors and the other children to excel - and, in effect, to show off his excellence. In consequence the participation reported in gymnastics (trampoline) and in swimming represents a 100% improvement over his involvement in these activities at regular school.

That such results can be achieved and responses aroused should, I feel, come as no surprise, in the light of the many reports of similar results in other programs related primarily to overcoming psychological problems arising from a breakdown of communication.

Certainly these results contrast even more dramatically with his earlier history and scholastic record:

Diagnosed, when about 3 years old, as Hard of Hearing by the Hospital for Sick Children (we never did convince our own doctor or his associate specialist of our beliefs - M. was "just slow in getting his act together"), he was tested and accepted for Metropolitan School for the Deaf where for two years he was 'taught' by their totally oral methods, and we, his parents, were told to encourage the use of the hearing aid and to talk to him constantly.

It was at the end of this period, when his behavior had become thoroughly unpredictable, that he had his first psychiatric assessment, with the aforementioned diagnosis. M. was recommended to a recovery (behavioral modification) program at the West End Creche. (Dr. H.)

This was the commencement of a period of half-day 'schooling' programs which lasted for more than two years, during which M. did recover the ability to tolerate others, and to gain some understanding of basic academics (number facts, etc., for example). The delay in his being reintroduced to a regular school program was due to the lack of a suitable opening and, once again, we had to take forceful measures first to get M. into all-day school attendance and then to have him entered into the promised classes for aphasic-type language disabilities then operating at Bedford Park School.

Even here it was only a half-day program at first, although M. was now almost 9 years old, and we once again had to request that Scarborough take up the slack by continuing to accept him in their regular opportunity (slow-learner) classes for the balance of each day. However, he made progress; was advanced to a full-day in his second year; was receiving fair to good reports (albeit with the rider that he was 'not a true aphasic') -- and then was refused admission to his third year because, among other objections, he was not making sufficient progress to justify the space he was taking.

Forewarned, in this instance, we queried his status again at the Hospital for Sick Children; were advised "No change"; and recommended to the behavior modification program at the Clarke Institute of Psychiatry. The staff there were sympathetic and interested, but M. was clearly far ahead in mental ability compared to the intended recipients of their program. However, through their promotion, M. was permitted to join the residential school at Belleville, where he again stayed for two years before being asked to leave on account of his unacceptable behavior.

A point worth noting here is that previously we had been of the understanding that there was no official use of sign language in Ontario Schools for the Deaf, nor that children from Metro area could attend at other than the School for the Deaf in Toronto. How much earlier these rulings and/or situations had existed I still do not know, but, certainly, since then many similar limitations to the broader approach of teaching these children have been reduced or eliminated.

Belleville, and the temporary placement in Scarborough that followed, represent the priormentioned behavioral breakdowns that led to my appeal to our MPP, M.'s introduction to the Special Education Branch of the Ministry, and ultimately his admission to the Thistletown Day Program. But only after could we safely say that we had explored all other possibly suitable local alternatives.

I can conclude only that in M.'s case the communication problem stems so directly from a total lack of verbalism - both externally and internally - that the rest of the world with its intense verbal reliance and conditioning just cannot truly relate do the circumstances and cannot feed or feedback in terms of M.'s language (internal processing system).

Such a statement is, of course, not categorically true, but I will contend that those instances which would show it as an exaggeration only serve to prove its essential truth.

Naturally, as a parent, it is easier to recall the optimistic and encouraging comments that have been made about M. over the years, but nevertheless these have been repeated by many of his teachers and mentors along the way, and have proved out by the recent developments:

"We're always being surprised by how much M. knows." "When I work with M. on a one-to-one basis, it's amazing how much he can accomplish." "I have the feeling that if only I could work with M. on a one-to-one basis all the time there is nothing he couldn't learn." "Every so often there will be a flash of comprehension - like a loose connection rejoining and a light coming on - and you know that you should take time to follow through and pursue it right then, while its's happening."

All sentiments that we, his family, can endorse. And with even greater feelings of guilt, most probably, because surely we should be ready to take the time and make the effort ahead of anyone.

Theoretically, and, I suppose, ethically, yes we should. But taking the time is the difficulty for, particularly in M.'s case, invariably it takes more time than one has available, and if one cannot stay with the subject to its conclusion then likely the lesson will not be understood, much less learned. It is all too easy to decide not to start an explanation to begin with; not to bother to stimulate his interest; not to attempt to involve him in one's projects and one's problems. It is all too easy to ignore a child like M. who, seemingly, is happy in his own company, with his own thoughts, and his own limited interests.

So the whole pattern, the whole life-style, is wrongly suited. One knows it, but to change would call for a vast upheaval of the most difficult kind - a cultural rebuilding - and in the face of the knowledge (of the excuse, if you must) that it all might be for nothing anyway. Certainly, the longer one fails to see the situation as it really is; the longer one fails to make the change; the tougher it becomes and the less likely it appears it will succeed.

And so one says, "If only I had known then what I know now!"

21

Review of Programs for the Language-disordered in Ontario

This is a summary of some specific programs. A film is available, made with the support of the Ministry of Education, illustrating aspects of the education of autistic children in Ontario.

21.1 Autistic Children

Special classroom programs for autistic children have increased in number since 1971, but the majority of board of education areas in Ontario do not have specific programs for this group. Autistic children are found in:

21.1.1 Facilities for the Mentally Retarded

Low-functioning children who are autistic or have autistic tendencies are likely to be found in developmental centres, classes and schools for the trainable mentally retarded. They are also found (as children, adolescents, or adults) in regional centres such as Huronia and Cedar Springs (both included in this study).

Difficulties of diagnosis, difficulties of finding alternative placement, and the simple fact that placement with a mentally retarded group is the least inappropriate choice for a very low-functioning and severely learning-handicapped individual, lead to this conclusion. This is true of other advanced educational communities. For example, in the surveys of need which took place prior to the full transfer of the trainable mentally retarded group to the educational system in Britain in 1971, the "missing autistics" were to be found in every facility for the mentally retarded which was of any size. The "missing autistics" not accounted for by appropriate classification and placement in many areas may be in these alternative facilities.

There are interesting programs. One which was studied and contributed to the statistical analysis is the "total communication" program for autistic/trainable retarded children in the McCordic School administered by the Metro Toronto Board of Education. Based essentially on a behavior management approach, this program experiments not only with verbal language linked with sign language, but with other forms of symbol, e.g. Bliss Symbols linked with sign or spoken language. The total communication program is organized and directed under the guidance of a speech pathologist. Videotapes of the program have been made by the school. A current research into methods of communication funded by the Ministry of Education is making major use of this school program (1978).

The Hung study (a contract research carried out for the Ministry of Education, Ontario) is an intensive study, making use of detailed task/skill analysis and behavioral modification techniques on 12 severely handicapped and initially non-verbal autistic children.

It was based in the Rotary School for trainable retarded (Toronto) and included children from the Metro Toronto system of schools. A report on this study has been presented to the Ministry of Education.

21.1.2 Classes/Units for Autistics Within the School System

These appear to be a small minority. Autistic children are found as individuals or subgroups within classes for children with communication disorder. Those responsible for special education in the Hamilton Board of Education stressed that the system preferred to view children as having "communication disorder"; they were placed in appropriate classes or referred to appropriate hospital facilities, but labelling as autistic, aphasic, etc. was not reliable or appropriate.

One of the very few classes for autistics is the Wellington County unit (Edward Johnson School, Guelph) housed in a public elementary school with its own room taught by one teacher with supporting aides/volunteers. The program has changed in response to the perception of the needs of a group of children with severe learning and language difficulties. It is eclectic, making use of small group training and social situations and one-to-one teaching to develop social and adaptive skills and language.

There was an earlier emphasis on some sound discrimination/articulation training to develop vocalizing for language, also language/vocabulary training, e.g. use of Peabody and Developmental Learning Material plus a range of kindergarten/primary learning materials. More recently, sign-language has been introduced as a useful medium of communication. Behavior modification techniques are used, but as needed. Field trips, contact between students and children from upper grades of the main school, and a summer school are all part of the program.

The program is best described by the videotapes of the class prepared by the Wellington County Board of Education.

The Waterloo County Board of Education instituted a program in 1974/75 in the Prueter Public School, Kitchener. This also is a separate school classroom with some modifications to meet the needs of autistic children. Under its first teacher, the program was based on the "Judevine" approach, which appears to be essentially a systematic use of behavior modification (in school and home) based on primary reinforcers such as food. Perception of need is likely to lead to the setting up of a second such class.

The programs and the resources of such detached classes may be usefully compared with the more extensive, planned facilities provided where an entire school building or unit on a school site has been adapted to need. Examples are the schools administered by Wayne County, Michigan (referred to later) and the various units in California represented by the Santa Barbara Autism Dissemination Project or reported in its administrative manual.

Calculation of the probable prevalence of autistic children in a school-age population, using estimates by Lotter, Wing and U.S.A. sources (4 per 10,000) suggests that less than half the autistic children in an area have been explicitly identified and placed in such classes. The reader is referred to Chapter 14 for discussion.

21.1.3 A School for Autistic Children

So far as this study is aware, there is only one day school devoted to autistic children in Ontario. This is the McHugh School in Ottawa. The school is housed on part of the upper floor of the Vincent Massey Public School, but is part of the system of hospital schools administered by the Royal Ottawa Hospital. The McHugh School was set up as a research project to assess the needs of autistic children and devise educational programs for them. It was the recent subject of a contract research carried out by the University of Ottawa for the Ministry of Education. The first years of the development of the school are described in that report. The school covers the elementary school range. It applies a number of teaching techniques incorporating behavior management. Verbal language is the medium or goal for most classes. There is one class which is taught sign language linked where possible with pictures and printed language and verbalizing. There has been trial of systematic language programs.

Since the inception of the school need has led to the establishment of a kindergarten/pre-school unit. An adolescent unit is also being established (1977).

21.1.4 A Residential Unit for Adolescent Autistics

Excepting the above, the only other specific provision (1977) for adolescent autistic children (12 to 18 years) is Kerry's Place, Clarksburg. Intended for a small group of adolescent children (10), it was funded by the Ministry of Health as an "active treatment centre", i.e. the purpose of the program was to improve the functioning and status of those placed in the program, with a view to alternative placement within a defined time span or course of treatment.

One purpose of the residential setting is to permit an intensive educational and management approach, providing a community within which the child operates, which allows for more intensive, effective social and practical/adaptive skills training. As a treatment centre, Kerry's Place is supported by the Ministry of Education through the local school board which provides the necessary teachers for the educational program in the narrower sense. The total program is closely related to the use of the attached farmland garden and buildings for practical education and training; it is closely related to gardening and similar practical pursuits.

In these respects, the unit is like a farm-school or total community of the kind planned for adolescent autistics by the National Autistic Society (U.K.), in its Somerset Place, a farm project vocational/training/community-life preparation scheme located within a village in a rural area (see Elgar (1975)). It works towards creating job opportunities for its participants (to some degree like the L'Arche projects inspired by Vanier). The program seems more likely to succeed as a long-term commitment to community life or as a vehicle for placement in practical training/job situations near the unit. Students who were founder members of the unit already have been placed in practical job situations in the locality.

21.1.5 Other Programs for Autistic Children

Autistic children are found in schools such as the Southshore School, Sudbury Board of Education, a small "special" school providing short-term (up to two years' placement) for children with behavior disorders, language difficulties and learning difficulties. This school is closely associated with the Algoma Sanitarium.

A major range of provision for autistic children is found within the Thistletown Regional Centre (Etobicoke). This is basically an intensive psychiatric treatment centre, providing a variety of programs for children with severe behavior disturbance and associated handicaps. It provides (i) classroom (ii) pre-school (iii) residential programs located within specialized "cottage" type facilities (House 17 and House 20) with their own child-care and behavior consultant staff. Programs cover the educational gamut, with psychologist and speech pathologist staff to offer guidance on individual programs. Within the 'house' programs, the emphasis is on intensive one-to-one work with children, using behavior modification and operant conditioning approaches. The programs are reflected in the statistical analyses of this study.

A short videotape of a child undergoing a highly-prescriptive behavior-modification approach to language was prepared by the research team. A short videotape was also prepared of a home program for an autistic boy, using Distar material and administered by a parent under the guidance of Thistletown consultant staff.

The Clarke Institute program is interesting though on a small scale. This day program drew its subjects by referral mainly from the population of the Metro Toronto School Board system for trainable retarded children at the time of the study. Subjects appear to cover a range of severe handicap involving communication disorder. A small group was dealt with by three child-care workers (1977), supervised by the director of the program. It has developed "total communication" using sign language with verbalizing, but also incorporating finger-spelling and written language to meet individual need. The school program is basically the communication program through operant re-inforcement and use plus supporting developmental activities with sensori-motor and manipulative school material, gym periods, etc. It is on a part-time basis rather than a complete school program. This project was incorporated in the study. Accounts of the development of the project are available from those who developed it, Drs. Webster and Konstantareas. A film of the project is available. (See Konstantareas (1976))

Specialized facilities such as the Children's Psychiatric Research Institute (C.P.R.I.), London, are reported to handle autistic children as part of its clientele, with severe behavioral or intellectual handicaps reviewed, assessed, or placed in residential treatment. The study was not able to gain access to this program through either medical or educational contacts.

Boards of education such as Brant County, Hamilton-Wentworth, Hamilton - to name those known to the study - make use of specialized facilities in C.P.R.I. or McMaster/Chedoke Hospitals.

A mailed inquiry to a number of boards of education at the end of the study also confirmed that smaller and rural authorities use more specialized psychiatric, psychological, or speech pathology facilities in major centres/hospitals when they themselves do not provide these services for children with communication disorder.

In summary, even with the resources listed, the provisions for identifying, assessing, and educating autistic children appear to be extremely limited in many areas of the province.

21.2 Aphasic Children

It is open to doubt whether the label "aphasic" is specific in diagnostic, psychological or educational terms. The classification usually means a child with severe language delay or impairment, possibly but not necessarily showing clear signs of neurological handicap.

There is little provision for aphasic children, as such, except in two programs. One is the Bedford Park Public School Language Program serving the Metropolitan Toronto area, and the other is the aphasic unit in the Sir James Whitney School for the Deaf, Belleville.

21.2.1 Bedford Park does not identify children as aphasic. The program is described in the case history in Part Three of the Report.

21.2.2 The Belleville unit explicitly defines the characteristics and needs of the aphasic children it serves. They appear to have expressive and receptive language disorder with emphasis on expressive handicap. There is the expected heterogeneity. The group includes a few children with severe hearing handicap. It has a significant number of children with neurological handicap.

The program is dedicated to the Association Method of instruction for aphasics devised by McGinnis (1963) and more recently elaborated and set out in a form more suitable for planning program and training teachers by DuBard (1974).

In addition to its own classes, the project acts increasingly in a consultative capacity to boards of education, teachers, and others within the region, to spread understanding of the needs and characteristics of severely language-disordered children and the Association Method.

The Association Method refers to the association between sound/syllable production taught to the child and the visual medium of print. It begins, like Eisenson's suggestions for teaching non-verbal aphasics (1972), with phonological units and phonological discrimination, not with words or linguistic structures. The child is taught to discriminate and produce sets of syllables representing important sounds, e.g. "e" in all its spelling variants, and to associate the sound to the full set of spellings. Considerable stress is placed, in view of the known weakness of aphasics in this area, on training of auditory memory at whatever level the child is operating, viz. syllable repetition or repetition of sentence or of a story. Though the program is prescriptive, in lesson form, each child is involved in the activity of listening, remembering and reproducing language as soon as he is capable.

As syllables are mastered, they are used to build sets of word-patterns which are in turn associated with pictures. At this point, the program incorporates much in the average kindergarten-primary classroom (making connections between own pictures and words) but in a more structured manner, i.e. the child must be able to distinguish and recite the words associated with pictures.

When vocabulary has been acquired, patterned drills for specific sentence structures are developed. Considerable importance is attached to recording in cursive writing. Finally, when children have developed mastery of expressive language, this is used in more open, developmental ways, e.g. in classroom projects and dialogue.

Though tightly sequenced and teacher-controlled, the method does not require specific teaching materials except for the sequences set out in the teachers' manual, and can draw on a wide variety of teacher-made material. It has the appeal of being "open" and translatable without expense to any classroom.

A short video-tape was prepared by the research team to illustrate the nature and progression of this program (April 1977).

21.3 Other Programs

Few developmental programs devised specially for language-delayed children were observed in educational settings. These may be operated by speech pathologists as part of their clinical/therapeutic program. These were not observed by the study.

Part of the approach to young language-delayed children in the Chedoke Hospital (Hamilton) pre-school unit is based on the work of Reynall. It incorporates specific stages viz. using objects, play, early symbolism, use of language for regulation of behavior. It provides guidelines for teachers/therapists in interacting with and stimulating young children through the use of suitable play/activity material which is at the choice of the teacher, i.e. the program is both "open" (developmental) and structured in general plan.

The description of Dr. Joan Reynell's own program, given under the heading Visits to Other Educational Systems, illustrates the basic philosophy and techniques.

A film of the Reynell approach is available and has been used for professional development and establishment of the program in Ontario.

As noted previously in analyses of program, there is little reference of an explicit kind by participants in the study to developmental or structured programs such as: Lahey-Bloom, Reynell, or Laura Lee at the developmental extreme, through the Nisonger program (Horstmeier and McDonald), Miller and Yoder, Bricker and Bricker, to the behavioral extreme of the Kent; Guess, Sailor and Baer; and Gray-Fygetakis programs.

School programs for the language-disordered appear to rely on an eclectic mixture of materials and methods, with no particular commitment to a theory of language or technique, and often basically approximating to normal special-educational programs in terms of academic content (as noted in analyses of programs).

The Southshore School (Sudbury) appears to have used alternative programs, including Laura Lee's "open" structured approach, using children's activities and conversation around designed themes.

The Department of Audiology, Hospital for Sick Children, (Toronto) uses a variety of programs and techniques for its clientele of severely handicapped children including all varieties of aphasics. This facility was the only one to make specific reference to the fact it was trying out the Bloom-Lahey approach (one based on semantic-conceptual foundations, incorporating early childhood experience and Piagetian principles). This Department did not participate in the study, but the information is derived from two visits and information kindly provided by the Director.

21.3.1 Structured/prescriptive programs

Structured/prescriptive programs are mainly associated with behavior-modification techniques (e.g. in units such as the Thistletown Regional Centre) or a highly sequenced, teacher-directed conventional classroom setting. Again, choice of specific programs from the considerable range available is limited. The McHugh School (Ottawa) for autistic children has used a sequenced behavioral approach to spoken language and has recently adopted a more explicit variant, the Kent (1972, 1974) program.

One of the most popular programs of the prescriptive kind is the Distar language program. It is used most consistently and explicitly in the special unit (House 17) of the Thistletown Regional Centre where the supporting techniques are also committed to behavior management through operant conditioning. It has also been adapted effectively to establish basic language in an autistic child who has been taught by his mother through operant conditioning techniques under the close guidance of consultants from the Thistletown unit. A videotape was made by the research workers of this home program. The Distar materials are used, though not generally, in the Bedford Park program and is a central feature of program in a few schools.

The Non-SLIP (concrete) symbol system is limited, apparently, to the Thistletown units referred to above. It has proved useful with severely handicapped non-speaking autistic children, but it works best where there are already elements of language in the child's repertoire. The Thistletown team have suggested that if the child can discriminate and place in sequence specific shapes, he can nearly as readily learn to discriminate graphic letter shapes. An experiment is proceeding in teaching written language, beginning with discrimination of letters; one child was already at the stage of selecting and typing letters (by matching) and making the auditory-visual match. It is hoped to connect this stage with the Distar language program when it appears appropriate. A videotape of this approach was made by the research team.

This experiment has similarities to the "Itardian Method" proposed by Lavigna (Camarillo State Hospital, California) referred to later, in which three severely retarded adolescent autistics who have resisted all attempts to teach them communication, have acquired a very small set of words by a process of discrimination, association and reward. (None of these approaches has been applied, or apparently found necessary, for the aphasic child.)

21.4 Alternatives to Spoken Language

Alternative systems such as sign, finger-spelling, picture-boards and visual symbols are being increasingly used as substitutes or supports for spoken language -- as indicated in the statistical analysis of programs.

Sign language systems are being used among groups identified as mentally retarded (Regional Centres) and as one method of communication, or as part of "Total Communication" among several autistic groups as noted in previous discussion of the McCordic School (Toronto) and Clarke Institute (Toronto) programs and other school or residential programs.

The Bliss Symbol system is the only visual system in general use. The study identified a number of classes in which Bliss was being used as well as in its place of origin, the Ontario Centre for Crippled Children (Toronto). It is being usefully applied to mentally-retarded groups/individuals who have other severe physical handicaps (e.g. motor or articulatory) or are low functioning or may have an additional language handicap, e.g. in the Regional Centres studied. Apart from this, it is mainly used among physically handicapped, e.g. cerebral-palsied children.

The Bliss Symbol system is now being used in a wide variety of settings, i.e. with various handicap groups, as an introduction to reading and as a cognitive skills program, but these uses were not observed in the present study.

The research team recorded a brief videotape of one such Bliss program for cerebral-palsied children supported by a board of education, in the Chedoke Hospital, Hamilton, to illustrate the process of interpreting, learning and "reading" Bliss symbols. The McCordick School (Toronto) "Total Communication" program is apparently one in which Bliss Symbols can also be introduced as an alternative, or additional to other systems.

As noted, these alternative systems are being used with much the same variety of groups in other educational systems, e.g. U.S.A. sign (autistic, mentally retarded); Bliss (mentally retarded and physically handicapped); and U.K. sign (autistic, mentally retarded/physically handicapped).

An example of a teaching/technological device which is worthy of further study is the "electronic ear". This was developed by Dr. Tomatis, of France. From his work with singers as well as handicapped, he concluded that auditory/articulatory response to speech sounds can be trained much more effectively than it is at present. The child listens and responds to recorded speech which is filtered to alter its fundamental frequencies, in such ways as to force the child to improve auditory figure-ground discrimination and memory, and make increasingly precise and well-articulated response.

The method has been effectively employed with children who have speech or learning disabilities, dramatically so, as portrayed in the film on the work of the Ottawa Child Study Centre under the guidance of Dr. Sidlauskis. The method/technology is being extended to other schools, it is understood.

The most interesting and rewarding programs and innovations in the United Kingdom and U.S. are discussed briefly in the following chapter.

22 A Review of Programs Abroad

22.1 The United Kingdom

During three weeks in the autumn of 1976, visits were made to fifteen facilities for language-impaired children, to associations/organizations concerned with this handicap, and to experts in the field. The latter included:

1) Professor David Crystal, Department of Linguistics, University of Reading;

2) Dr. Joan Reynell, Wolfson Centre, London;

3) Drs. N. O'Connor and B. Hermelin, Medical Research Council, Britain (The principal and senior tutor of the National Hospitals for Speech Sciences: the professional training organization for speech therapists);

4) Mr. Peter Young, member of the Warnock Committee, a government commission on special education;

5) The National Autistic Society;

6) The association for All Speech Impaired Children (AFASIC).

Visits were made to the following special schools and units:

1) Sybil Elgar School, (Autistic) Ealing, London;

2) Helen Allison School, (Autistic) Gravesend, Kent;

3) Harborough Day School, London (Autistic);

4) Griffin Manor Day School, London (Autistic);

5) Moor House School, Oxted, Surrey (aphasic/language-impaired);

6) The John Horniman School, Worthing, Sussex (aphasic/language impaired);

7) Ackmar School, Inner London Educational Authority (hearing-handicapped);

8) The Frank Barnes School, Clerkenwell, Inner London Educational Authority (hearing-handicapped);

9) Gillian Fraser day unit for language impaired children, ILEA.

There was also an opportunity to attend a conference of the National Council for the Education of Handicapped Children at which developments in alternative media, such as sign language and Bliss Symbols, were reviewed.

It was possible to get a conspectus of recent developments in the U.K. across the whole field of language handicap. Visits are discussed briefly. Full notes were made on each visit: often the school has its own brochure. These materials form the basis of the following comments and are available for inspection.

22.1.1 Autistic Children in the U.K. - Programs and Approaches

Visits were made to two independent residential schools: Sybil Elgar School, London, and Helen Allison School, Gravesend. Both have been established over 10 years and were founded by the National Society for Autistic Children, a voluntary organization. Both schools are inspected by, and acceptable to, the Department of Education and Science. Local education authorities (school boards) place students in these schools, paying fees for them, since residential places are not available elsewhere for them.

The Sybil Elgar School, named after its pioneering first principal, is located in a number of neighbouring old suburban houses which have been remodelled to provide classrooms and a residence for children. It has 36 students, half of them weekly boarders, ranging from 7 to 15 years of age. Organization of teaching groups is by age and severity of handicap. At least half the children still have considerable language difficulty, but many young children who were mute on first placement have improved considerably; there are few mute children. There are 6 children in each class, but the adult-student ratio is 1:3 since a teacher and teacher's aide work in each class. There are part-time art, swimming, and movement teachers. There is one almost full-time speech pathologist. An eminent authority on autism (Professor M. Rutter) is the consultant psychiatrist and visits once a term.

The school was one of the first to develop a more structured, behavioral approach to autistic children, i.e. through adapting specific learning tasks to the developmental level of the children, using very concrete materials and working systematically from objects and three-dimensional stimuli to two-dimensional analogues and pictures and language.

The organization and curriculum of the school are described in Elgar (Wing (1966)), by Elgar and Wing, and by Elgar in Everard (1974). The school can be identified as the most "structured" of the three units compared by Bartak and Rutter (1973 a,b,) in a research study which concluded that the school with the most structured curriculum appeared most effective.

The Helen Allison School resembles the above in many particulars i.e. being based in adapted houses which provide rather cramped teaching spaces for teaching groups of 6 children each. There are 30 children in all, from 5 to 15 years of age. One third attend daily, the rest being weekly boarders. The organization is based on 'family' grouping. As in Sybil Elgar, the adult-student ratio is 1:3. The program covers the full range of the elementary school curriculum, and is less structured than Sybil Elgar School. See Landman, the principal, for a full description of school and curriculum. The staff is chosen to be multidisciplinary; the residential staff have child-care training. There is a consultant psychiatrist, and the only full-time speech pathologist in any school for autistics.

Both schools follow essentially an adapted simplified elementary school curriculum, even for children of secondary school age. The program emphasizes the development of adaptive and social skills of communication and, as far as possible, basic academic skills (covering the entire range of school activities). Organization is based on separate classes, with small groups working within each class, as contrasted with the intensive one-to-one to the one-to-three arrangement found in behavior-management models such as the Hung project (Ontario), Integra Foundation summer course, or the half-hour modules of the Santa Barbara Autism unit.

The program follows the British primary school curriculum which emphasizes developmental considerations, i.e. has based learning on children's needs and stages of development, rather than specifying tasks and goals in terms of explicit behaviors and placing the emphasis on management and complete direction by the teacher.

Behavior modification techniques are not a dominant feature of teaching; they are adapted as necessary to shaping desired behavior or laying the foundation for teaching skills, e.g. with individual children who have particularly difficult behavior patterns. The program is made highly specific in terms of activities and tasks rather than in terms of behavioral objectives.

As a rule, structured language programs are not used, but communicative skills are encouraged constantly in the classroom, with the support of more structured individual work by the speech pathologist. It was felt by the schools that the support of the speech pathologist was important and more knowledge about language development and remediation would be welcomed.

At secondary school level, the program is still essentially concerned with basic adaptive and educational skills but emphasizing projects, practical work, outside trips, and if possible work experience.

The schools appear to be happy, purposeful communities. Attempts are being made to develop provision for adolescents and school-leavers.

There should be an interesting comparison with the school at the Neuropsychiatric Institute, University of California, Los Angeles.

The Helen Allison School has attached to it the Hurst-Skeffington Hostel. (See Brown/Landman for a fuller description.) This provides 10 places for those in the 15 to 25 year range; these include students still at Helen Allison School but in their leaving year, and those who have left school. The staff consists of a senior house-parent and three assistants. The day/teaching staff consists of a day supervisor and two assistants who supervise work placements and the educational/vocational activities within the hostel. The purpose of the hostel is to provide a supportive environment and a period of transition for autistic adolescents who will find considerable difficulty in independent living or employment. Employment opportunities are provided through the local mental retardation facilities, and there is a close association in both directions, viz. autistic adolescents going out to sheltered workshops and retarded individuals coming into the hostel for day-time practical activities.

Within the hostel, there is provision on a limited scale for practical occupations, e.g. gardening, producing cement molds which are sold for building construction, and traditional handwork activities such as making rugs, textiles, and fitting together pre-manufactured components.

A facility for adolescents is being developed in the vicinity of the Sybil Elgar School but independent of it.

Somerset Court, Somerset, an important development, is a newly established rural residential community sponsored by the Autistic Trust. It is for adolescent school leavers and young adults who would otherwise stay at home or enter mental subnormality hospitals. They aim to provide a self-supporting rural community based on craft and horticultural production, which will provide opportunities for independence and vocational competence within a sheltered setting. It is of interest to compare this with Kerry's Place (Ontario). The reader is referred to Elgar (1975) for a fuller description.

In planning provision for the autistic handicapped, the province of Ontario needs to take account of the future needs for adolescents and young adults up to age 21.

Visits were made to day schools in the Inner London Education Authority, Harborough School, and Griffin Manor School, both established in 1967. These units accept a range of severely-handicapped children, comprising brain-damaged and severely emotionally-disturbed children as well as classical autistics. Both schools draw students from a wide area, one north and the other south of the Thames River. They have a high proportion of immigrant and disadvantaged children because of the "inner city" areas they serve.

Programs, as in the residential schools, are essentially adapted elementary school programs, in small groups (1 to 6, but with a teacher and teaching assistant making this effectively 1 to 3) in a classroom form of organization and timetabling. Behavior modification is not widely or rigorously used, though elements are used to meet the needs of particular children. Motivation is by approval, social reinforcement by teacher and mastery of task rather than through primary reinforcement such as food or the use of tokens. The emphasis is on creating an orderly routine, flexible and varied activities, with individual programs for each child. Every opportunity is taken, e.g. in Harborough School, for developing group skills and interaction.

There are no structured language programs, though the principal of Harborough is well aware of developments in the field. The classroom environment and activities outside schools are used to stimulate communication and provide motivation to communicate. It is assumed that children will finally acquire language if taught and communicated with at their developmental level (see the Neuropsychiatric Institute, U.C.L.A. for an explicit statement of this philosophy).

One of the contributions of Harborough School is the development of a graded series of stimuli for presenting concepts, from the concrete to the abstract, by making coloured slides of the real objects in children's environment.

Much of the material in Harborough (as in the two residential schools) is made or adapted by the teachers. They prepare programs to meet the individual needs of children. There is little faith in the claims of specific packaged program materials, as compared with the improvement of the teacher's knowledge and skills. Though goals are not stated in behavioral form, schools such as Harborough have explicit aims and objectives, and have a very distinct ethos and direction emanating from the purposeful activity of staff and principal.

Harborough provides for 24 children (3-16 years of age). It has a head-teacher, 4 teachers, 4 nursery assistants (aides) and one additional teaching assistant (classes are 1:6 in terms of teacher staffing, 1:3 in terms of adult-child ratio). A consultant psychiatrist attends once a week, a psychiatric social worker for 2½ days a week, an educational psychologist once a month, and a speech pathologist once a week, as well as a music therapist. Three outside trips a week are part of the program. Staff work closely with parents.

The sense of direction was less evident in Griffin Manor school, though this may have been due to the fact that this unit was under a temporary principal at the time of visit.

These schools (day and residential) do not provide particularly good models of planned space and use of resources, since they have had to adapt to old and, in some instances, cramped premises, adapted to their purpose.

Sign language (the Paget-Gorman system) is being introduced in the Sybil Elgar School for specific students. The entire school staff is undertaking systematic training in sign-language one day a week (1976).

A general evaluation of these autistic programs is that they appear to meet the needs of the autistic or autistic-like children placed in them at least as effectively, in terms of social, adaptive and language learning as do more structured programs in the U.S.A.

It appears that there has been a considerable growth in Britain, since 1971, in the provision of small classes and units for autistics attached to regular schools; or attempts at integration of autistic groups with normal children, cf. the Leicester City experiment and work done in Oxfordshire. The National Autistic Society provides an exhaustive listing of such classes and units. As noted, it has established its own schools, such as the ones visited and others, and these are fully supported, in terms of teacher salary and running costs, by the education authorities which use them.

22.1.2 Provision for the Severely Language-impaired (Aphasic)

More interesting, in terms of innovation, are the schools for language-impaired children. Visits were made to Moor House School and John Horniman School for language-impaired/aphasic children. They are two of six schools of this kind in the United Kingdom; others include the Edith Edwards School, Banstead, Surrey; Dawn School, Nottingham, Percy Hedley School, Newcastle and the Ewing School, Manchester.

Moor House and John Horniman are residential schools, established by a voluntary association representing parents, the Invalid Children's Aid Association which has pressed for research and provision for groups such as language-impaired and learning-disability (dyslexic) children. Another group devoted entirely to the needs of language-impaired children is AFASIC (Association for All Speech Impaired Children).

Like the autistic and other voluntary special schools, these schools are supported by fees paid by local education authorities for placement of students. Because of the limited number of places, each school draws from a wide area, mainly Southern England.

Moor House was established in 1947 through the interest of an eminent neurologist with particular commitment to speech and language. It accepts children from 7 to 16 years of age, though children of 5 can be considered for placement. There are 80 children, who must be of normal intelligence and not autistic. Classes average 10 children. Apart from headteacher and deputy headteacher, there are 9 teachers, 7 speech therapists, and 11 child-care workers for the residential aspect of the school. There is a full-time educational psychologist who plays a major part in intake and evaluation, and consultant clinics by paediatrician, psychiatrist and otologist.

Children in the school are those with severe language delay and disorder, including expressive and receptive aphasics, children with severe articulation problems, dyspraxia, and physical difficulties such as cleft palate. It was noted by the headteacher that the majority of students had lost or failed to develop speech as a result of severe infections leading to convulsions, or other traumata, early in life.

Hearing handicap is an important contributory handicap in some children. One criterion for entry to the school is that the hearing threshold should be above 40 db in speech frequencies; this is to prevent what used to occur, as late as 1970 when the present writer last observed the school, when a proportion of children were entering the school with severe hearing loss. These children had spent years in receiving inappropriate "oral" approaches in schools for the hearing-handicapped.

There is in the school one class with a wide age range containing receptive aphasics. In this class, the Paget-Gorman sign language system is being successfully used to establish communication (often for the first time). On this foundation is built an approach to speech where possible through (i) acquiring a vocabulary in pictures and printed word and (ii) learning to organize proper syntax through use of a colour coding system devised and developed by the present principal when working as a classroom teacher in the school (Lea (1970)).

The program includes intensive speech therapy for all children, emphasizes language/communication and is structured. Language work is linked with remediation in reading. In many respects, especially for older students, the curriculum is the normal elementary/secondary program but slowed in pace and more structured. No specific linguistic programs are used apart from sign language and the Lea system, except for individual programs devised by the speech therapists.

There is an elaborate system of assessment requiring children and parents to stay for two days, to receive a searching investigation through tests of ability, language and observation. Progress is assessed systematically and regularly.

There is a close co-operation between speech therapists and teachers in developing language remediation; children attend for intensive remedial work, but therapists also visit and work closely with teachers in the classroom.

This is of particular interest in planning services for the language-impaired, in view of the changing role of the speech pathologist (language pathologist) on both sides of the Atlantic, and the search for the most effective use of the talents of the professional specializing in language, i.e. in assessment, planning remediation and program rather than in specific tutorial/clinical therapy.

It is interesting to compare the very different pattern of usage of the speech pathologist in the John Horniman School, and the varying patterns in facilities in Ontario: Bedford Park School; the board services in Ottawa and in Carleton; Thistletown Regional Centre; Kerry's Place, and the regional centres for the mentally retarded, to cite representative examples.

The John Horniman School has 24 children,aged 6 to 9 years, who are severely language-handicapped (aphasic). A day care centre for pre-school children has recently been established. There are 5 teachers and 1 speech therapist.

The program has evolved considerably in the last five or six years. The present program is highly structured in terms of content and sequence. It begins with systematic instruction in the Paget-Gorman system of sign language. This leads to the learning of strictly controlled vocabulary through pictures and written language. This in turn is used to build up receptive and expressive use of spoken language, structured through colour-coding of syntactic structures. An organized progression of "remedial syntax" (Conn) is used to guide this development.

The details of "remedial syntax" have been criticized from the linguistic viewpoint by Crystal, but the method has served to stimulate interest in practical ways of helping children master graded and progressive linguistic structures. The language-sampling technique of assessment devised by Crystal et al has been adapted in an economical and practical way. The gifted deputy-principal of the school (Hutt) realizes curriculum goals in practical ways through devising classroom activities and developing materials such as controlled vocabulary, spelling and reading materials. Detailed notes of this program are given later.

It is considered by the school that its present function is to prepare the ground for use of language through a highly structured program and pass most of its students (at age 9) to the sister school, Dawn House, which will build more systematic and creative language on these foundations in the pre-adolescent student. The program is one of the most interesting and stimulating.

A survey of 9 year old children transferred back to regular schools from John Horniman was carried out by Pauline Griffith, former speech therapist at the school and now senior tutor in the National College of Speech Sciences. It showed that one-third of the group failed to progress and others showed the effect of their previous severe language delay (Griffith (1969)). It was findings such as this which led to the conclusion that schools such as John Horniman must provide intensive basic language programs but that the remediation of language must progress into adolescence.

Moor House carried out a survey of past school leavers. This exposed the low levels of language and educational attainment in severely language-disordered persons, and hence the low level of occupation achieved. It emphasized the need for better guidance and pre-vocational training.

A "non-verbal" approach to early language remediation

An interesting program, contrasted with the above, was the "non-verbal"approach to language-delayed children at the Gillian Fraser day unit, Inner London Education Authority. The program accepts 20 children aged below 6, with a significant language delay due to a number of causes including environmental causes. It has two teachers, two speech pathologists and two nursing assistants. Teacher and therapist work together in a group managing and stimulating.

The program emphasized the pre-linguistic stages of learning: discrimination of stimuli, perceptual skills (visual, auditory and rhythm), classification and sequencing of stimuli. It is contended that children with gross language delay have already failed to communicate verbally, are frustrated and overwhelmed by spoken language; they are often echolalic. It is not felt rewarding to press language on a child already under "language pressure" (Kleffner).

The program owes much to the philosophy of a psychologist and a speech therapist, Fraser and Blockley (1973). Criticism of the assumptions of the program have been voiced by linguists such as Crystal (1976). It is open to question how far this is a language program or more of a "Head Start" type of intervention. The prediction of the present writer is that this type of program will probably evolve towards a more orthodox model following the Reynell pattern, and the use of alternative symbolism, such as sign, leading to total communication.

22.1.3 Systematic Use of Sign Language and 'Total Communication'

Valuable experience was obtained from observation of a school for the hearing-handicapped in the Inner London Education Authority area. This was Ackmar School, a small day school for severely hearing-impaired elementary-age children. Experimental use of the Paget-Gorman sign system has led to the conclusion that children communicate more effectively and acquire a better mastery of spoken language (including vocabulary and intonation) than in the previously-used oral approach.

Direct classroom observation of 6 year old students revealed a lively response to sign language and an ability to link sign with vocalizing at the developmental level appropriate to the child. Children were observed to accompany early fluent reading with fluent signs.

Observation of classroom use and of a comparison, on videotape, of conventional sign language with the Paget-Gorman system illustrated the economy and precision of the Paget-Gorman system. The consultant-teacher who supervises the use of sign language in the school, as well as teaching, is the exponent of sign language on this demonstration video-tape.

She produced evidence that by suitable "phrasing" of sign language such as Paget-Gorman which has an "English" syntax, the deaf child was able to acquire natural intonation in spoken language much more effectively. This was evident in their speech. Even severely handicapped children (multiple-handicapped, autistic) of low ability, in one group in the school, were observed to be responsive to intensive communication through sign and verbalizing.

Convinced by his experience of the merits of "total communication" based on this system, the Headteacher planned to introduce sign language to all children in the school when they entered, i.e. to use it in a developmental manner rather than waiting for children to fail on an oral approach then introduce sign language as a last-stage remedial measure.

Research on the Paget-Gorman sign system with handicapped groups is reported by Fenn (1976).

22.1.4 "Cued Speech": an Alternative Signal System to Aid Speech

Experimental use of the Cornett system of "cued speech" was observed in the Frank Barnes School, Clerkenwell, I.L.E.A., a day school for hearing-impaired children.

In use for three years, the Cornett system is based on research and development in the U.S.A. but is sponsored by a society in the U.K. Dr. Cornett is a consultant. The system is a limited set of manual cues used to indicate features of speech, such as consonants, through shape and position. These signs are made near the mouth to augment speech-reading.

A limited repertoire of cues have to be learned, as compared with a full sign or finger-spelling system. Observations showed it to be very effective in making speech-reading efficient in children of 8 to 13 years with severe hearing handicap -- so much so that a pre-adolescent group had assimilated every detail of pronunciation of their teacher, a clear but well-marked East Indian variant of English. He was able to demonstrate that, even with speech-amplifiers switched off, and relying completely on the limited repertoire of sign, the group could answer unfamiliar questions perfectly.

Best results are likely to be found in younger children, 5 to 7 years old. The method has been introduced informally at the early school level and is now being taught in a more structured way at this level. Parents are involved in the program, but difficulties have been found in simply giving them descriptions and tape-recordings. Clearly a more intensive program of training is needed. This caution applies, however, to many alternative language experiments.

The Cornett approach may appear to have limited application outside the education of the severely hearing-handicapped. It has, in fact, value for children who have learned to vocalize and produce speech sounds but need specific monitoring in control and articulation of speech sounds. The "cues" are limited in number and should be easily learned, i.e. do not require such perceptual discrimination and fine motor control, and tax on the memory, as a full sign system. This could well be used as a stage of transition from full sign with verbalizing to concentration on producing accurate speech. A child who had learned sign language would be well prepared to acquire the limited additional cues of the Cornett system.

22.1.5 Trends in Language Research and Remediation in the U.K.

Discussions with professionals and representatives of voluntary organizations suggested that there is now, in the United Kingdom, a considerable interest in the education of autistic and language-impaired children.

A recent major report (The Quirk Report) advocated major changes in the training of speech therapists. More emphasis is being given to language therapy, to the need for knowledge of linguistics, the development of language in children, and to rational procedures in the assessment of handicap and the planning of remediation. In particular, the assessment procedure and rational approach to planning remediation, put forward by Crystal et al, are having an important effect on the thinking and practice of the younger generation of speech therapists, through intensive professional-development training. Speech therapists are aware of the range of main language programs available on both sides of the Atlantic.

Experiments are being conducted into the use of systematic sign language and total communication with hearing-handicapped and multiple-handicapped/retarded groups (Fenn (1976)). The Bliss Symbol system is being tried in a small number of special schools, under the guidance of a team based on the Ontario Crippled Children's Centre.

Since 1971, the number of day classes and units for autistic children has mushroomed; schools and units for the language-impaired have also developed, though not on the same scale. An indication of the growing interest in the specific problems of the language-impaired is the founding of a society devoted to these needs -- AFASIC, or the Association for All Speech-Impaired Children.

Rewarding enterprise is shown by parental organizations such as the Invalid Children's Aid Association in founding its own special schools which are evaluated and accepted by the Department of Education and Science and fully supported through fees from boards of education for children placed in the schools. Ontario lacks this sort of enterprise: the system forbids it.

University and teacher-training institutions have begun to respond by establishing professional development courses in language-impairment. It is planned to develop a new kind of professional - the speech therapist/language teacher. One course serving this purpose already exists in the University of Durham, Newcastle-on-Tyne; another is planned in the Department of Linguistic Science, University of Reading.

The National Autistic Society considers that it now has some political influence; the danger now is the too-rapid spread of units for autistics before teachers are adequately trained, and of a back-lash in the regular schools housing these units because of failure to understand these children's needs. If anything, the danger is now that the parents of the autistic child may expect too much and become too optimistic about degrees of improvement and "cure" of autistic children.

Discussion with Professor Crystal emphasized the importance of reconciling theory and practice, the need for knowledge of children's language acquisition, and the procedures for practical remediation.

The major instrument of progress is effective and intensive professional in-service training, backed by a "write-in" and consultant service. Teaching centres in Ontario should examine this model which reconciles the academic and the practical.

Observation and discussion of the Crystal (et al) assessment technique, using analysis of language samples, convinced the present writer of the value of this approach to assessment and planning of remediation.

22.2 Study Visits to the U.S.A.

Developments in the U.S.A. are usually better known to the Canadian educator through professional contacts, reading of literature, and the fact that a significant number of speech pathologists (in particular those with Master's degree) were trained in the U.S.A.

22.2.1 Programs Visited in the U.S.A.

These programs were:

1) The Wayne County program for autistic children, Detroit;

2) The Santa Barbara Autism Dissemination Project, California;

3) The Camarillo State Hospital, California;

4) The school for autistic children in the Neuropsychiatric Institute, U.C.L.A.

5) Department of Speech and Language, North Western University, Evanston, Illinois.

In addition, contact was made with the Autistic Society (U.S.A.) for literature, lists of films and contacts in the field of autism.

22.2.2 The Wayne County System covers one-third of the State of Michigan. The program for mental retardation is aimed at integration of the mentally retarded into suitable educational and social rehabilitation programs, following much the same principles of "normalization" as those adopted by the Ministry of Community and Social Services in Ontario.

The autistic program is administered within this large mental retardation program which has some 500 professional personnel. Adapted public school buildings are used for educational programs for mentally retarded children of school age and for vocational units. The use of systematic behavior modification procedures and trials of alternative systems such as picture boards and Bliss Symbols were observed being used with the mentally retarded.

An interesting part of this program was a parent-education and home-support project serviced by two speech pathologists. A comprehensive audio-visual presentation of this is available.

The whole system for the mentally retarded follows a plan set out in accordance with current state legislation mandating special education. It has a manual setting out goals and specific procedures for instruction, including a systematic approach to language intervention. This language program was originally devised within a state hospital for the retarded. It has many behavioral aspects, viz. use of operant conditioning techniques, stages of motor and vocal imitation, etc. which are closely similar to the Kent program. This guide has been augmented and surpassed by work carried out by speech pathologists in the schools.

The autistic units are based in elementary school buildings no longer required by school boards. These schools have been remodelled to suit their new purposes.

The one observed had two small teaching areas formed out of a previous classroom. The two teaching areas shared a central area where teaching materials were stored. Individual teaching could take place in this area, or there could be one-way observation of either teaching area. These areas included spaces, with louvered doors, for use as "time-out" facilities. There were also larger classroom/activity rooms for the older adolescent/young adult group who followed more practical, vocationally-related activities.

Each teaching group contained 6 children, but the adult-child ratio was lowered to 1:3 by the presence of an aide-volunteer with each teacher. Teachers were observed working with groups ranging from 1 to 1, to 1 to 3.

Programs are based on specific behavioral goals in adaptive, social and communication skills. Behavior-modification techniques more or less rigorously applied, and using primary re-inforcement (candy, tokens) or social re-inforcement are the ones mainly employed.

Teaching materials are as in many units for the autistic (see the Santa Barbara Project listing of materials). They are pre-school, kindergarten, or early primary level materials and tasks. The more practical, work-related activities for the adolescents are also considerably simplified and re-structured.

Language programs are developed and used in co-operation with the consultant speech pathologist who also takes out children regularly for intensive individual work in language. Sign language is used regularly with students. Alternatives, such as the Bliss Symbols, have been used though this approach was not actually seen. The Non-SLIP system has been tried with very handicapped individuals but has been judged by the speech pathologist to be most effective with children who already have some receptive language.

The speech pathologist recorded in detail specific goals and criteria for progress. Use is made of "intrusive" stimulation, i.e. the unresponsive child is heavily and directly stimulated and his responses physically cued and directly manipulated, if necessary. There appears to be an appreciation of the range of structured language systems/materials available.

Outside interests, projects and field trips are built into the program though the schools have no garden, shops, etc. of their own. Staff meet regularly for discussion, planning of programs and professional development. Cross-visiting with other schools for the autistic is encouraged.

Children with the full range of severe handicaps associated with autism are accepted. Dr. J. Freeman, the research psychologist of the Neuropsychiatric Institute, U.C.L.A., who was visiting at the time, commented that children were accepted into the Wayne County units with levels of handicap much more severe than those imposed for admission to autistic classes provided by the State of California.

A brief evaluation of this system suggests that it is purposeful and humane and is open to try alternatives within its behaviorist philosophy. A weakness is that the autistic child is identified with the mentally retarded group and that setting up of separate autistic units inhibits integration with a regular school setting. However, in many respects, the level of provision for the autistic child appeared more systematic and more effective than school provision in Ontario.

A basic weakness of staffing is that the teacher-aides are students or similar personnel who are basically untrained except on the job, and there is a high degree of turn-over. The "teachers", too, may be child-care staff. Teacher-aides are not trained to the professional level of the British "nursery assistant" who was described as acting as teacher-aide in British autistic schools and units.

22.2.3 A "Total Communication" System for the Hearing-handicapped

An interesting comparison to experiments with "total communication" in Ontario and the U.K. is provided by the Wayne County day classes for hearing-handicapped. These are based on, and integrated with, regular elementary schools. The consultant in charge of this program had been trained and had many years of professional experience as an "oralist" teacher of the deaf. She had been converted to the value of using a manual sign system by her experience with total communication. The sign system preferred was visual English, i.e. one in which English syntax and grammatical markers for grammatical structures are built into the sign system.

When children are placed in the system, parents are consulted and advised on the pros and cons of the program; it is made clear to them that it is essential for them to support the program and to learn enough signs to re-inforce the child at home. The program appears to be making good progress in establishing total communication, and producing results in acquisition of spoken language which are superior to a purely oral approach for children (estimated as a large proportion) who have failed to respond to the classical oral/aural methods for the deaf.

This experience further re-inforces the claims of "total communication" as a viable and effective technique.

22.2.4 The Santa Barbara Autism Dissemination Project

The Santa Barbara Autism Dissemination Project was seen during its final phase. It was originally directed by Koegel and owes much to the behavioral approach of Lovaas (1977). The philosophy and practice of the project are described in two published manuals, one for administrators and one for teachers (Donnellan-Walsh et al (1976)). These rank as among the most lucid, well-researched and practical guides for teachers of the autistic which have been produced.

The manual adopts a systematic behavior-modification approach to all aspects of the educational program, including language. One valuable contribution is the suggestion for the assessment of the autistic child: i.e.language in terms of two dimensions: communication vs. mutism; immediate vs. delayed echolalia. This technique permits the teacher to estimate the severity of the child's language handicap in communicating, suggests points of departure for remediation and illustrates how a handicap (echolalia) can be suppressed or used to help remediation.

Excellent descriptions are given of the basic curricular material needed in a classroom for the autistic, and of the planning of space/resources to meet the needs of autistic children. A very useful review is provided of the kinds of planned space found in various units in California. Clear-cut procedures are given for defining behavioral goals, criteria for mastery and progress, and for recording progress. Grouping and timetabling are explicitly discussed.

The Santa Barbara autistic unit which is the base for the project was itself hampered by having to receive children identified and assessed by the local county board school system. In its final phase, it was receiving a high proportion of children with severe mental retardation and neurological damage who were probably not autistic.

Staffing of the unit was based on 12 child-care workers (who had unusually good qualification such as pursuing a Master's degree), a teacher and supporting staff such as the speech pathologist and the director of the program. There were 6 children in the program, when observed.

The timetable (described in the Teachers' Manual) is rigidly set out in half-hour modules, with a set time for each activity with a child or group of two children involving a particular staff member. Children rotated, period by period, to different staff members for different tasks.

This was deliberate, as it was found that autistic children find it difficult to distinguish the learning task from specific stimuli and the specific persons presenting the task and must be taught explicitly to generalize their learning. The instructional procedures were in terms of specific behavioral goals, defined sequences of activity leading to those goals and specific recommendations for kind and pace of re-inforcement and presentation of stimuli. Recommended lists of materials or tasks were listed. Rigorous immediate monitoring and recording were viewed as crucial for success. In this curriculum the immediate goals were well-defined but what is less evident is the rationale for the total curriculum.

An adolescent group housed in a separate facility and organized on essentially the same principles, appeared to be isolated, rather sterile and unstimulating.

One of the most interesting aspects of the whole project (not necessarily constrained by the conditions of the teaching unit) was the plan for dissemination of concepts and techniques relating to education of the autistic child in California. The dissemination team worked within a school for a week together with the teacher(s) who were receiving training. They accepted and defined, in practical terms, the problems encountered by the teacher, demonstrated directly how to set up recommended techniques with the children. Children went home at 2 p.m. (as they do from the base unit); the rest of the school day was devoted to professional development.

The project team have also made interesting recommendations based on their experience in educating parents. The Teachers' Manual distinguishes between (i) guidance/discussion aimed at dealing with personal anxieties and attitudes and (ii) practical, specific techniques of management of the child in the home.

There is a great deal to be learned from this project, representing a committed behavior-modification approach to education and management of the autistic child. Comparisons with alternative approaches are also rewarding.

A similar valuable source of information and guidance emerging from practical experience is the set of manuals on teaching the autistic produced with funds from a Federal grant by the Los Angeles County Office of the Superintendent of Schools (1977).

22.2.5 The Camarillo State Hospital Program

The autistic programs seen at the Camarillo State Hospital, located between Santa Barbara and Los Angeles, serves institutionalized groups from pre-school to adult level. It is part of the upgrading and reform of a major psychiatric institution, i.e. the movement to open up and "normalize" closed psychiatric facilities by more effective application of relationship and behavior modification techniques and education in its broadest sense. An interesting unit was the pre-school, a unit with its own special space, with the usual pre-school materials, but used in structured small groups and one-to-one situations for teaching fundamental sensori-motor and communication skills.

Sign language was being used with a variety of individuals, as well as structured language materials such as the Peabody or Fokes syntax materials. It was noted by speech pathologists, who were conducting individual sessions, and by chief nursing staff, that the use of sign language had stimulated a much more effective level of communication than had been possible with individuals unable, despite prolonged efforts, to acquire spoken language.

The hospital has a strong commitment to applied research. The chief research psychologist (Lavigna) was a member of the team of the Santa Barbara Project.

An interesting development was Lavigna's "Itardian Method" for instructing extremely handicapped autistic adolescents, which has already been described in Chapter 21.

22.2.6 The Neuropsychiatric Institute School, U.C.L.A.

A quite different approach is presented by the school in the Neuropsychiatric Institute, University of California, Los Angeles. The approach is based on the assumption that the autistic child can best be assessed and taught by adjusting tasks to developmental level. The structuring of learning materials is seen as more important than techniques of operant conditioning, though behavior shaping and modification can be employed at later stages to re-inforce some language skills. The intensive, unremitting repetition and re-inforcement found in rigorous operant-conditioning approaches, e.g. Santa Barbara program, Lovaas, etc. is judged not to be necessary if the tasks are adjusted to the child's developmental level and learning conditions are correct. The program is fully described by Graham, Flaherty and Richey in Ritvo (1976). This developmental approach provides an interesting parallel to the approaches described in the schools for the autistics in the U.K.

There appears to be a considerable influence of what might be termed the "British empirical technique" and the emphasis on autism as a primary language disorder in several centres in the U.S.A., e.g. the Morgan Centre, California, as contrasted with the more traditional behavior-modification approaches.

Other evidence on programs for autistic children in the U.S.A. is summarized in the report (to the Ontario Ministry of Education) of the University of Ottawa research project on the McHugh School for autistic children, Ottawa.

22.2.7 The Language-Disordered Group: North Western University

One of the most rewarding visits was to the Department of Speech and Language, North Western University, Evanston, Illinois. This comprehensive department, including learning disabilities, deals with teaching, research and development work. Basic courses are at Master's level for speech pathologists; the bachelor's degree is regarded as foundation preparation in the U.S.A.

Students and tutors were observed preparing the "open" material for lessons using Lee's interactive teaching method, and the method was seen being applied with pre-school children, using a flannel-graph scene, toys, dialogue and discussion. This appears to be a stimulating, practical technique which fits well into a variety of approaches, including a pre-school or early school developmental approach.

Other observations were of research projects (federally funded) involving the assessment and remediation of groups of young, preschool children with language-delay/disorder. One project dealt with children of 3 years of age and over. It was considered feasible to identify their difficulties and plan individual remediation. The research indicates that early intervention is crucial. Intervention is based on individual work, but was also observed being applied to small groups (2 to 3).

A striking feature of the remedial work was the training of the teacher to motivate and guide a young child through a series of language structures and repetition of responses. It even ensured the practice of phonological (articulation) patterns which were deficient, through clever choice of words and patterned repetition, so that there was no need for specific articulation drills.

Another relevant project was the language remediation of a group of young/pre-school cerebral-palsied children. Mothers were involved as teaching aides in the therapy sessions. Approaches to this group dealt flexibly and comprehensively with the child's difficulties, using a variety of techniques for communication by the child such as conditioning him to respond to yes/no questions by eye movement.

This is relevant to the issue of the use of alternative media with severely crippled children.

Physical, "occupational" and language therapy are integrated in this project, since the whole child has to learn to adapt and communicate. Study of the ways parents participate in therapy groups and interpret information has led to concerns about how far parents can cope with the stress of assimilating and acting on information about their handicapped children. Research is to be conducted on the characteristics of the parent who can cope as "teacher".

Interesting research topics include the study of the development of language in 2-3 year olds, using adaptations of Chafe's case-grammar (1970) to describe the child's semantics. Such developments, reconciling the practical knowledge of the speech pathologist and pure research, are likely, in due course, to improve assessment and remediation of child language. Interest in the department is not focussed on one aspect of language but deals with the phonological, syntactic and semantic; it is interested in all handicap groups.

Within the Department of Learning Disability, the emphasis is now on learning disability as a language disability, and on the central importance of information-processing breakdown in learning disability. An example is Vogel's (1976) study of the significant association between level of oral syntax in 8 year olds and dyslexia.

Discussion with Dr. Linda Swisher revealed a person who has considerable first-hand knowledge of autistic children and those with language disorder. She was very helpful in indicating sources of information and bibliographies on language assessment in particular.

Many aspects of this Department make it a rewarding centre for further study and contact.

22.3 Ideas from the U.K.

There is a need in Ontario for comprehensive provision for the autistic child in a range of residential schools, day classes, and units attached to regular schools. Another topic which requires careful study is the British attempt to relate the curriculum of the autistic child to developmental educational principles and not commit everything to a behavior modification approach/program. Another lesson is the importance of political commitment and extension of public knowledge in advancing provision for special groups such as the autistic.

Ontario needs one or more special schools, on the pattern of John Horniman School and Moor House School, to meet the needs of severely language-handicapped children, in particular those in the rural areas and northern Ontario who do not have access to therapeutic and educational facilities comparable to those in the metropolitan areas. These schools could act as resource centres, research and development centres, and as teacher-training centres (on the model of the Belleville school for the hearing-impaired).

The value of the Reynell approach for young language-delayed children has already been noted. It is currently being extended to children with more severe language disorders, e.g. the aphasic children in John Horniman School, and to mentally retarded children. The program deserves further study and replication.

One of the concerns of the users of sign language in Britain has been to adopt a system with a conceptual basis (i.e. a sign stands for a basic concept, with added markers for specific meaning such as "Animal" - "Dog", rather than having completely different and arbitrary signs for each concept).

Another requirement is that the sign system should have English syntax, word order, and grammatical markers (for plural, person, tense, etc.) built into it. This is represented by the Paget-Gorman system. It is unlikely that this system will be adopted across the Atlantic, as it is a specific ideolect of sign language. The American Sign Language system and its derivatives have many claims because of the amount of resources and information built into it, as well as historical claims.

Nevertheless, the British concerns for selecting a sign language with the required characteristics for effective learning and communication -- by the normal teacher/parent as well as the language-handicapped -- should be carefully considered.

At present, the choice of a variant of sign language for use in a program is based on quite arbitrary considerations; teachers, or others, using sign language probably have insufficient knowledge of available varieties to make decisions. For example, signs observed being used in one intensive behavior-modification program appeared quite arbitrary, if not idiosyncratic to the program.

The variants of sign language should be reviewed by competent professional and research personnel, and guidance issued on the best single variant(s) for use in particular circumstances.

British research (Fenn (1976) and other references) underlines the need for caution in adopting sign language, and the difficulties and confusions experienced by low-functioning children in acquiring sign language. This confirms the cautions uttered by sources such as the Santa Barbara Teachers' Manual on the use of multiple stimuli for autistic children, as found in total communication linking sign and speech.

Sign language in itself is obviously not a panacea.

As noted above, a variant of "sign" or rather cue, is the Cornett system of "cued speech" to improve lip-reading by hearing-impaired children. Further study and trial of this would be rewarding, particularly with language-handicapped groups who have at least vocalizing or receptive language.

The reader is referred to the videotapes contrasting conventional sign language and the Paget-Gorman system, and similar training tapes available from the Inner London Education Authority, England, and to research study videotapes of teaching and use of Paget-Gorman sign language with handicapped groups.

22.4 Ideas from U.S.A.

Much that has already been said applies to observations in the U.S.A. It is reassuring to find so much common ground in trial of alternative methods.

One of the valuable examples to be followed is the organization of effective present practice (based on behavior modification techniques) summarized in the Santa Barbara Autism Projects manuals (1976) and related projects (e.g. Los Angeles County Project manuals, 1977).

Related to the above is the need to develop similar models for effective "dissemination" of skills and knowledge, i.e. teacher training and parent training/guidance as set out in the Santa Barbara model.

Adequate planning of space and resources for autistic and language-handicapped children in general would profit from consideration of the comments on administration, planning and design presented in the above manuals.

Consideration should be given to study of the various ways in which the small group of autistic children can be best organized and helped, viz. whether in separate classes integrated with public schools, in separate schools, or in schools administered by some other more general handicap category. Experience of the organization of these various forms of education and treatment is severely limited in Ontario. It would be of value to examine the Wayne County pattern (of separate facilities for autistics) and contrast it with the only other example currently available in Ontario, the McHugh School, Ottawa, as well as the British models.

What was learned from observations of the North Western University Department of Speech and Language projects in early language intervention were:

1) The value of effective early identification and intervention, by age 3 or earlier, which could be a model for development in Ontario.

2) The effective combination of developmental and linguistically structured approaches in the Laura Lee method, and other individual/small group approaches used by therapists to reconcile language principles with an open learning approach not dependent on drills and formal repetition.

3) The combination of organization, materials, and techniques to ensure effective attention to semantic (vocabulary), structural (syntax) and phonological aspects of early language as appropriate.

4) The North Western University Department also presents a model of co-operation between the various emphases of speech, of language, and of learning disabilities in the broader sense, and stresses the linguistic foundations of the more widespread "specific learning disabilities". This conciliation of interests is rewarding.

Study of the North Western programs of applied research and remediation techniques is advocated.

BIBLIOGRAPHY

de Ajuriaguerra, J. et al. (1976). "The development and prognosis of dysphasia in children" in Morehead, D.M. and Morehead, A.E. (eds.), Normal and Deficient Child Language. University Park Press.

Alajouanine, T. L'. (1965),"Acquired aphasia in children." Brain. 88, 653.

Alexander, D., Dores, P. and Firestone, P. (1977). "Case Studies: Language Acquisition in Three Autistic Children." chapter 7 in Lovaas, O., The Autistic Child: Language Development Through Behavior Modification. Irvington Publications, N.Y.

Anisfeld, M., Barlow, J. and Frail, C.M. (1968). "Distinctive features in the pluralization rules of English speakers." Language and Speech 11, 31-37.

Anisfeld, M. and Gordon, M. (1968). "On the psycho-phonological structure of English inflectional rules." Journal of Verbal Learning and Verbal Behavior. 7, 973-979.

Anisfeld, M. and Tucker, G.R. (1973). "English pluralization rules of six-year-old children" in Ferguson, C.A. and Slobin, D.I. (eds.). Studies of Language Development. Holt Rinehart.

Baer, D.M. and Sherman, K.A. (1964). "Reinforcement control of generalized imitation in young children." J. Exp. Child Psychol. 1, 37-29.

Baker, Bruce, L. (1976). "Parent involvement in programming for developmentally disabled children." Chapter 17 in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Baker, L., Cantwell, D.P. Rutter, M. and Bartak, L. (1976). "Language and autism" in Ritvo, E.R. (ed.) Autism: Diagnosis, Current Research and Management. Spectrum Publications, Inc., N.Y.

Baltaxe, C.A.M. and Simmonds, J.O. (1975). "Language in childhood psychosis: a review." Journal of Speech and Hearing Disorders. 40, 439-458.

Bangs, T.E. (1968). Language and Learning Disorders of the Pre-Academic Child. Appleton Century.

Barlow and Frail (1968). See Anisfeld, Barlow and Frail, 1968.

Bartak, L. and Rutter, M. (1971). "Educational treatment of autistic children" in Rutter, M. (ed.) Infantile Autism: Concepts, Characteristics and Treatment. Churchill Livingstone, London.

Bartak, L. and Rutter, M. (1973). "Special educational treatment of autistic children, 1. Design of study and characteristics of units." J. Child Psychology and Psychiatry. 14, 61.

Bartak, L. and Rutter, M. (1974). "The use of personal pronouns by autistic children." Journal of Autism and Childhood Schizophrenia. 4, 217-222.

Bartolucci, G. and Pierce, S. (1977) "A preliminary comparison of phonological development in autistic, normal and mentally retarded subjects." British Journal of Disorders of Communication. 12, #2.

Bateman, B. (1976). "Discussion Summary: language intervention for the mentally retarded." Chapter 23 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Bates, E. (1976). "Pragmatics and sociolinguistics in child language." in Morehead, D.M. and Morehead, A.E. (eds.), Normal and Deficient Child Language. University Park Press.

Beagley, H.A. and Wrenn, M. (1970). "Clinical follow-up of 192 normally hearing children with delayed speech." Journal of Laryngology and Otology. 84, 1001-1011

Bellugi, U. (1965). "The development of interrogative structures in children's speech." in Riegel, K. (ed.), The Development of Language Functions. University of Michigan Language Development Program Report #8, 103-108.

Bellugi, U. and Klima, E. (1972), "The roots of language in the sign talk of the deaf." Psychology Today. 6 60-64.

Bellugi, U. (1972). "Development of language in the normal child." in McLean, J.E. et. al (eds.), Language Intervention with the Retarded. University Park Press.

Bellugi, U. (1972). "Studies in sign language." American Ann. Deaf. 68-84.

Bellugi, U. and Brown, R. (eds.) 1964. "The Acquisition of Language." Monographs of the Society for Research in Child Development. 29, (Serial #92) 43-79.

Benton, A.L. (1964). "Developmental Aphasia (DA) and Brain Damage." Cortex 1, 40-52.

Bensberg, G.J. and Sigelman, C.K. (1976). "Definitions and prevalence." Chapter 2 in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Berger, M. and Yule, W. (1972). "Cognitive assessment in young children with language delay." in Rutter, M. and Martin, J.A.M. (eds.), The Child With Delayed Speech, Clinics in Developmental Medicine. #43, Spastics International Medical Publications.

Berko, J. (1958). "The child's learning of English morphology." Word. 14, 150-177.

Berko, J. and Brown, R. (1960). "Psycholinguistic research methods." in Mussen, P. (ed.), Handbook of Research Methods in Child Development. Wiley.

Berry, P. (ed.)(1976). *Language and Communication in the Mentally Handicapped*. University Park Press.

Bever, T.G., Fodor, J.A. and Weksel, W. (1965). "On the acquisition of syntax: a critique of "contextual generalization". *Psych . Rev*. 72, 467-482.

Bever, T.G. (1970). "The cognitive basis for linguistic structures." in Hayes, J.R. (ed.), *Cognition and the Development of Language*. Wiley.

Beveridge, M. (1976). "Patterns of interaction in the mentally handicapped." Chapter 9 in Berry, P. (ed.), *Language and Communication in the Mentally Handicapped*. University Park Press.

Blalock, J. and Johnson, D. (1974). "A study of play behavior in preschool learning disabled children." 11th Annual Convention Association of Children with Learning Disabilities, Houston.

Blasdell, R. and Jensen, P. (1969). "Stress and word position as determinants of imitation in first-language learners." *Journal of Speech and Hearing Research*. 13, 194-202.

Blishen, B.R. (1964). "A socio-economic index for occupations in Canada." *Canadian Review of Sociology and Anthropology*. Vol. 41, 41-53.

Blissymbolics Communication Foundation, 862 Eglinton Avenue East, Toronto, Canada.

Bloom, L. (1970). *Language Development: Form and Function in Emerging Grammars*. Cambridge M.I.T. Press.

Bloom, L.M. (1973). *One Word at a Time: The Use of Single Word Utterances Before Syntax*. The Hague, Mouton.

Bloom, L. (1974). "Talking, understanding and thinking." Chapter 11 in Schiefelbush, R.L. and Lloyd, L. (eds.). *Language Perspectives: Acquisition, Retardation and Intervention*. University Park Press.

Bloom, L.M. and Lahey, M. (1975). *Language Development and Language Disorders*. Wiley.

Bowerman, M. (1976). "Semantic factors in the acquisition of rules for word use and sentence construction." in Morehead, D.M. and Morehead. A.E. (eds.), *Normal and Deficient Child Language*. University Park Press.

Braine, M.D.S. (1963). "The ontogeny of English phrase structure: the first phrase." *Language*. 39 1-13.

Braine, M.D.S. (1971). "On two types of models of the internalization of grammar." in Slobin, D.I. (ed.), *The Ontogenesis of Grammar*. N.Y., Academic Press.

Bricker, D.D. and Bricker, W.A. (1971) (1972) (1973). Toddler Research and Intervention Project Report. I.M.R.D. Behavioral Research Monographs No. 20 (1971), No. 21 (1972) and No. 23 (1973), Institute on Mental Retardation and Intellectual Development, George Peabody College, Nashville, Tennessee.

Bricker, D.D. (1972). "Imitative sign training as a facilitator of word object association with low functioning children." American J. Ment. Defic. 76, 509-516.

Bricker, W.A. and Bricker, D.D. (1974). "An early language training strategy." Chapter 17 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Broen, P. (1972). "The verbal environment of the language learning child." American Speech and Hearing Association Monograph #17.

Brookshire, R.H. (1971). "Effects of trial time and inter-trial interval on naming by aphasic subjects." Journal of Communication Disorders. 3, 289-301.

Brown, R. and Bellugi, U. (1963). "Three processes in the child's acquisition of syntax." Harvard Educational Review. 34, 133-151.

Brown, R. and Fraser, C. (1964). "The acquisition of syntax." in Bellugi, U. and Brown, R. (eds.), The Acquisition of Language. University of Chicago Press.

Brown, R. and Fraser, C. (1964). "The acquisition of syntax." in Cofer, C.N. and Musgrave, B.S. (eds.), Verbal Behavior and Learning. McGraw Hill.

Brown, R., Cazden, D. and Bellugi, U. (1969). "The child's grammar from I to III." Minnesota Symposium in Child Psychology. Vol II, Hill, (ed.), University of Minnesota.

Brown, R. (1973). A First Language. Cambridge, Harvard University Press.

Brown, W. (Landman) (1976). "The Hurst-Skeffington Hostel for Autistic Children, Kent." (1976). The National Society for Autistic Children, 1a Golders Green Road, London, U.K. (Xeroxed).

Browning, E. (1972). I Can't See What You're Saying. Elek, London.

Bruce, D.J. (1964). "The analysis of word sounds by young children." British J. Ed. Psychol. 34.

Bryant, B. and Anisfeld, M. (1969). "Feedback versus no-feedback in testing children's knowledge of English pluralization rules." J. of Experimental Child Psych. 8, 250-255.

Butler, N.R. (1963). Perinatal Mortality. Livingstone, London.

Bryant, P. (1974). Perception and Understanding in Young Children. Basic Books, N.Y.

Carrier, J.K. (1974). "Application of functional analysis and a nonspeech response mode to teaching language." in McReynolds, L.V. (ed.), Developing Systematic Procedures for Training Children's Language. American Speech and Hearing Association Monograph #18.

Carrier, J.K. and Peak, T. (1975). Non-speech Language Institution Program (Non-SLIP). H. and H. Enterprises, Lawrence, Kansas.

Carrier, J.K. (1976). "Application of a non-speech language system with the severely language handicapped." in Lloyd, L. (ed.), Communication, Assessment and Intervention Strategies. University Park Press.

Carroll, J.B. and Freedle, R.O. (1972). Language Comprehension and the Acquisition of Knowledge. Wiley.

Carrow, E. (1968). "The development of auditory comprehension of language structure in children." Journal of Hearing and Speech Disorders. 33, 99.

Carrow, E. (1972). "Assessment of speech and language in children." in McLean, J.E. et. al. (eds.), Language Intervention in the Retarded. University Park.

Cazden, C. (1968). "The acquisition of noun and verb inflections." Child Development. 39, 433-438.

Cazden, C. (1968). "Some implications of research on language development for preschool education." in Hess, R.D. and Bear, R.M. (eds.), Early Education. Chicago, Aldine.

Cazden, C. (1972). Child Language and Education. N.Y. Holt Rinehart.

Central Advisory Council for Education (Wales) (1967). "Primary Education in Wales." Her Majesty's Stationery Office, London.

Chafe, W.L. (1970). Meaning and the Structure of Language. Chicago University Press.

Chalfant, J. (1968). "Systematic language instruction: an approach for teaching receptive language to young trainable children." Teaching Exceptional Children. 1, 1.

Chappell, G.E. (1970). "Developmental aphasia revisited." J. Communication Disorders. 3, 191-187.

Chomsky, N. (1965). Aspects of the Theory of Syntax. Cambridge M.I.T. Press.

Chomsky, C. (1969). The Acquisition of Syntax in Children from 5 to 10. Cambridge M.I.T. Press.

Chomsky, N. (1972). Language and Mind. (2nd ed.), N.Y. Harcourt Brace.

Churchill, D. (1972). "The relation of infantile autism and early childhood schizophrenia to developmental language disorders of childhood." J. Autism and Chil. Schizophrenia. 2 182-187.

Cicciarelli, A., Broen, P.A. and Siegel, G.M. (1976). "Language Assessment Procedures, Appendix A." in Lloyd, L. (ed.), Communication, Assessment and Intervention Strategies. University Park Press.

Clark, C.R. and Woodcock, R.W. (1976). "Graphic Systems of Communication." Chapter 14 in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Clark, E.V. (1973). "What's in a word? On the child's acquisition of semantics in the first language." in Moore, T.M. (ed.), Cognitive Development and the Acquisition of Language. Academic Press, N.Y.

Clark, E.V. (1974). "Some aspects of the conceptual basis for first language acquisition." Chapter 4 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspective: Acquisition, Retardation and Intervention. University Park Press.

Clark, G. (1967). "Educational treatment." in Mittler, P.J. (ed.), Aspects of Autism. British Psychological Society.

Cole, E.M. and Walker, L. (1964). "Reading and speech problems as expressions of a specific language disability." in Rioch, D. and Weinstein, E. (eds.), Disorders of Communication. Williams and Wilkins.

Compton, A.J. (1976). "Generative studies of children's phonological disorders; clinical ramifications." in Morehead, D.M. and Morehead, A.E. (eds.), Normal and Deficient Child Language. University Park Press.

Compton, D. (1970). "Generative studies of children's phonological disorders." J. of Speech and Hearing Disorders. 35, 315-339.

Condon, W.S. (1975). "Multiple response to sound in dysfunctional children." J. Autism and Child Schizophrenia. 5, 37-56.

Conn, P.J. (1971). "Remedial Syntax." John Horniman School Occasional Papers #1, Invalid Children's Aid Association, London, U.K.

Conn, P. and Richardson, M. (1976). "Approaches to the analysis of teacher language in the ESN(S) classroom." Chapter 8 in Berry, P. (ed.), Language and Communication in the Mentally Handicapped. University Park Press.

Cooper, J., Moodley, M. and Reynell, J. (1974). "Intervention programmes for preschool children with delayed language." British Journal of Disorders of Communication. 9, #2.

Cornett, O. (1967). "Cued Speech." American Ann. Deaf. 112, 3-13.

Cox, A., Rutter, M., Newman, S. and Bartak,L. (1975). "A comparative study of infantile autism and specific developmental receptive language disorder, II Parental characteristics." British J. of Psychiat. 126, 146-159.

Creak, M. (1961). "Schizophrenic syndrome in childhood: progress report of a working party." Cerebral Palsy Bulletin. 3 501-504.

Creak, M. (1964). "Schizophrenic syndrome in childhood: further progress report of a working party." Devel. Med. Child Neurol. 6, 530.

Critchley, M. (1959). The Study of Language Disorders: Past, Present and Future. The Centennial Lectures. N.Y., Putnam.

Critchley, M. (1967). "Aphasiological nomenclature and definitions." Cortex. 3, 1, 3-25.

Cromer, R.F. (1974), "The cognitive hypothesis of language acquisition and its implications for child language deficiency." in Morehead, D.M. and Morehead, A.E. (eds.), *Normal and Deficient Child Language*. University Park Press.

Cronbach, L.J. (1970). *Essentials of Psychological Testing*. Harper Row.

Crystal, D. (1972). *Prosodic Systems and Intonation in English*. Cambridge University Press.

Crystal, D., Fletcher, P. and Garman, M. (1976). *The Grammatical Analysis of Language Disability*. (Studies in Language Disability and Remediation 1.) Edward Arnold, London.

Crystal, D. and Davy, D. (1977). "Contrived sign language." in Schlesinger, I. and Namir, I., (eds.), *Current Trends in the Study of Sign Language of the Deaf*.

Cunningham, M.A. and Dixon, C. (1961). "A study of the language of an autistic child." *J. Child Psycho. and Psychiat*. 2, 193.

Cunningham, M.A. (1966). "A five year study of the language of an autistic child." *J. Chil. Psychol. and Psychiat*. 7, 143.

Cunningham, M.A. (1968). "A comparison of the language of psychotic and non-psychotic children who are mentally retarded." *J. Chil. Psychol. and Psychiat*. 9, 229.

Dale, P.S. (1976). *Language Development: Structure and Function*. (2nd ed.) Holt Rinehart.

Daley, D.N. (1973). "Differential diagnosis between the aphasic child and the educablementally deficient child." Report, Huronia Regional Centre, by Senior Speech Pathologist.

Davis, B. (1967). "A clinical method of appraisal of the language and learning behavior of young autistic children." *J. of Communication Disorders*. 1 277-296.

Declan, Sister Mary (1969). "Audiological findings in testing aphasic children." *Volta Review*. October 1969.

Dever, R.B. (1976). "Discussion summary: Non speech communication." Chapter 16 in Schiefelbush, R.L. and Lloyd, L. (eds.), *Language Perspectives, Acquisition and Intervention*. University Park Press.

Directory of Education (1975-1976). Ministry of Education, Ontario.

Doehring, D.G. (1960). "Visual spatial memory in aphasic children." *J. Speech and Hearing Research*. 3, 138-149.

Doherty, L. and Swisher, L. (1977). "Children with autistic behaviors." in Minifie, F.D. and Lloyd, L. (eds.), *Communicative and Cognitive Abilities: Early Behavioral Assessment*. University Park Press.

Donaldson, M.C. and Wales, R.J. (1970). "On the acquisition of some relational terms." in Hayes, J.R. (ed.), Cognition and the Development of language. Wiley, N.Y.

Douglas, J.W.B. (1964). The Home and the School. MacGibbon and Kee, London.

Drillien, C.M. (1970). "Complications of pregnancy and delivery." in Wortis, J. (ed.), Mental Retardation: An Annual Review. Vol. 1, Grune and Stratton.

DuBard, E. (1976). Teaching Aphasics and Other Language Deficient Children. University Press of Mississippi.

Efron, R. (1963). "Temporal perception, aphasia and deja vu." Brain. 86, 403-424.

Eimas, P. (1974). "Linguistic processing of speech by young infants." in Schiefelbush, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Eisenberg, L. (1956). "The autistic child in adolescence." Am. J. Psychiat. 112, 607.

Eisenberg, L. (1964). "Behavioral manifestations of cerebral damage in childhood" in Birch, H.G. (ed.), Brain Damage in Children. Williams and Wilkins, Baltimore.

Eisenson, J. (1972). Aphasia in Children. Harper and Row, N.Y.

Eisenson, J. and Ingram, D. (1972). "Childhood aphasia - an updated concept based on recent research." Acta Symbolica. 3, 108-116.

Elgar, S. (1966). "Teaching Autistic Children." in Wing, J. (ed.), Early Childhood Autism. (2nd ed.), Pergamon.

Elgar, S. (1975) in Everard, P. (ed.), An Approach to Teaching Autistic Children. Pergamon.

Elgar, S. (1975). Further education and training for the autistic adolescent/adult. The National Society for Autistic Children, la Golders Green Rd., London, U.K.

Elgar, S. and Wing, L. (1969). Teaching Autistic Children. Guides for Teachers #5, The National Society for Autistic Children, la Golders Green Rd., London, U.K.

Ervin, S.M. and Foster, G. (1960). "The development of meaning in children's descriptive terms." J. Abnormal and Social Psych. 61-271-275.

Ervin, S. (1964). "Limitation and structural change in children's language." in Lenneberg, E. (ed.), New Directions in the Study of Language. Cambridge, M.I.T.

Evans, I.M. (1971). "Theoretical and experimental aspects of the behaviour modification approach to autistic children." in Rutter, M. (ed.), Infantile Autism, Concepts, Characteristics and Treatment. Churchill, Livingstone.

Everard, P. (ed.) (1975). An Approach to Teaching Autistic Children. Pergamon.

Ewing, A.W.G. (1930). Aphasia in Children. London, Oxford University Press.

Farnham-Diggory, S. (1972). "Epilogue: The Design of a Free Learning Environment." Cognitive Processes in Education: A psychological preparation for teaching and curriculum development. Harper and Row.

Fay, W.H. and Butler, B.U. (1961). "Echolalia, I.Q. and the dichotomy of speech and language systems." J. Speech Res. 11, 365.

Fay, W.H. (1967). "Mitigated echolalia in children." J. of Speech and Hearing Research. 10, 305-310.

Fay, W. (1971). "On normal and autistic pronouns." J. Speech and Hearing Disorders 36, 343-349.

Fenn, G. and Rowe, J.A. (1974a). "An experiment in manual communication." British Journal of Disorders in Communication.

Fenn, G. (1974b). "Language Without Speech." Paper presented to the Annual General Meeting of the British Association for Applied Linguistics, Edinburgh, 1974.

Fenn, G. (1975). "The Development of Language through Signing in Children with Severe Auditory Impairment." Final Report to Social Science Research Council (U.K.) Grant 2867.

Fenn, G. (1976a). "The development of language through the medium of manual signs in profoundly deaf children." Sign Language Studies. 11, pp. 109-120.

Fenn, G. (1976b). "Against verbal enrichment." Chapter 5 in Berry, P. (ed.) Language and Communication in the Mentally Handicapped. University Park Press.

Ferguson, C.A. and Slobin, D.I. (eds.) (1973). Studies of Child Language Development. Holt Rinehart.

Fillmore, C.J. (1968). "The case for case." in Back, E. and Harms, R.T. (eds.), Universals in Linguistic Theory. N.Y. Holt Rinehart, pp. 1-88.

Flaharty, R. (1976). "Preschool assessment." in Ritvo, E.R. (ed.), Autism: Diagnosis, Current Research and Management. Spectrum Publications.

Flanders, N.A. (1970). Analysing Teaching Behavior. Addison Wesley.

Fraser, G.M. and Blockley, J. (1973). The Language Disordered Child. National Foundation for Educational Research. Slough, Bucks, U.K.

Friedlander, B.Z. (1970). "Receptive language development in infancy: Issues and problems." Merrill-Palmer Quarterly of Behavior and Development. 16, 7-51.

Fristoe, M. (ed.) (1975). Language Intervention Systems for the Retarded: A Catalog of Original Structured Language Programs in Use in the U.S. State of Alabama, Department of Education, Montgomery, Alabama, 36104.

Fristoe, M. (1976). "Language intervention systems: programs published in kit form." Appendix D in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Frith, U. and Hermelin, B. (1969). "The role of visual and motor cues for normal, subnormal, and autistic children." J. Child Psychol. and Psychiat. 10, 153.

Frith, U. (1970a). "Studies in pattern perception I Immediate recall of auditory sequences." J. Abnormal Psychol. 76, 413.

Frith, U. (1970b). "Studies in pattern perception II Reproduction and production of colour sequences." J. Exp. Child Psychol. 10, 120.

Furneaux, B. (1966). "The autistic child." New Education. Feb. 1966.

Fygetakis, L. and Gray, B.B. (1969). "Programmed conditioning of linguistic competence." Behaviour Research Therapy. 8, 153.

Fygetakis, L. and Ingram, D. (1973). "Language rehabilitation and programmed conditioning: a case study." Journal of Learning Disabilities. 6, 60-64

Gagne, R.M. (1970). The Conditions of Learning. (2nd ed.), Holt Rinehart.

Gallagher, J.J. (ed.) (1975). The Application of Child Development Research to Exceptional Children. Council for Exceptional Children.

Geschwind, N. (1964). "Non-aphasic disorders of speech." Int. J. Neurol. 4, 207.

Gleitman, L.R. and Rozin (1973). "Teaching reading by use of a syllabary." Reading Research Quarterly. VIII, 4.

Goldfarb, W., Goldfarb, M., Braunstein, P., Scholl, H. (1972). "Speech and language faults in schizophrenic children." J. of Autism and Chil. Schizophrenia.

Goldstein, R. Landau, W.M. and Kleffner, F.P. (1960). "Neurologic observations on a population of deaf and aphasic children." Annals of Otology, Rhinology and Laryngology. 69, 756-767.

Goodglass, H. and Hunt, J. (1958). "Grammatical complexity and aphasic speech." Word. 14, 197-207.

Goodglass, H. Fodor, I.G. and Schulhoff, C. (1967). "Prosodic factors in grammar - evidence from aphasia." J. Hearing and Speech Research. 10, 5-20.

Goodglass, H. (1968). "Studies on the grammar of aphasics." in Rosenberg, S. and Koplin, J. (eds.), Developments in Applied Psycholinguistics Research. Macmillan, N.Y. 177-208.

Goodglass, H., Gleason, J.B. and Hyde, M. (1970). "Some dimensions of auditory language comprehension in aphasia." J. Speech and Hearing Research. 13, 595-606.

Graham, V.L. (1976). "Educational approaches at the NPI School: The general program." Chapter 14 in Ritvo, E.R. (ed.), Autism: Diagnosis, Current Research and Management. Spectrum Press.

Gray, B.B. and Fygetakis, L. (1961). "The development of language as function of programmed conditioning." Behavior Research and Therapy. 6, 455-460.

Gray, B. and Fygetakis, L. (1968). "Mediated language acquisition for dysphasic children." Behavior Research and Therapy. 6, 263-280.

Gray, B. and Ryan, B. (1973). A Language Program for the Non-Language Child. Champaign, Ill. Research Press.

Greenfield, P.M. and Smith, J.H. (1976). The Structure of Communication in Early Language Development. Academic Press, N.Y.

Griffiths, P. (1969). "A follow-up study of children with disorders of speech." British Journal of Disorders of Communication. 4, 46-56.

Griffiths, P. (1972). "Developmental Aphasia: An introduction." John Horniman School Occasional Papers #2, Invalid Children's Aid Association, London, U.K.

Guralnick, H.J. (1976). "A research service model for support of handicapped children." Exceptional Children. 34, 277-282.

Griffith, R.J. and Ritvo, E.R. (1967). "Echolalia: Concerning the dynamics of the syndrome." J. Amer. Academy of Child Psychiatry. 6, 184-193.

Guess, D., Sailor, W. and Baer, D.M. (1974). "To teach language to retarded children." Chapter 25 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Gulliksen, E. (1953). Theory of Mental Tests. Wiley.

Gustason, B., Pfetzing, D., Zawolkow, E. (1972). Signing Exact English. National Association of the Deaf, Maryland.

Guttman, E. (1942). "Aphasia in children." Brain. 65, 205.

Hallahan and Cruickshank, W.M. (1973). The Psycho-educational Foundations of Learning Disabilities. Prentice-Hall.

Halliday, M.A.K. (1973). Explorations in the Functions of Language. Edward Arnold, London.

Halliday, M.A.K. (1977). "Learning how to mean." in Lenneberg, E. and Lenneberg, E. (eds.), Foundations of Language Development. N.Y. Academic Press.

Hartung, J.R. (1970). "A review of procedures to increase verbal imitation skills and functional speech in autistics." J. Hearing and Speech Disorders. 35, 203.

Havelkova, M. (1968). "Follow-up study of 71 children diagnosed as psychotic at pre-school age." Am. J. Ortho. Psychiat. 38, 846.

Hayes, J.R. (ed.) (1977). Cognition and the Development of Language. N.Y. Wiley.

Helm, D. (1976). "Psychodynamics and behavior modification approaches to the treatment of infantile autism: empirical similarities." J. of Autism and Childhood Schizophrenia. Vol. 6, #1.

Hermelin, B. and O'Connor, N. (1963). "The response and self-generated behaviour of severely disturbed children and severely subnormal controls." British J. Soc. Clinic. Psychol. 2, 37.

Hermelin, B. and O'Connor, N. (1964). "Effects of sensory input and sensory dominance on severely disturbed children and on subnormal controls." British J. Psychol. 55, 201.

Hermelin, B. and O'Connor, N. (1964). "Cross-modal transfer in normal, subnormal and autistic children. Neuropsychologia. 2, 229.

Hermelin, B. and O'Connor, N. (1965). "Visual imperception in psychotic children." British J. Psychol. 56, 455.

Hermelin, B. and O'Connor, N. (1967). "Perceptual and motor discrimination in psychotic and normal children." J. Genet. Psychol. 110, 117.

Hermelin, B. (1967a). "Recent experimental research." in Mittler, P.J. (ed.) Aspects of Autism. British Psychological Society.

Hermelin, B. (1967b). "Coding and immediate recall in autistic children." Proc. Roy. Soc. Med. 60, 563.

Hermelin, B. and O'Connor, N. (1968). "Measures of the occipital alpha rhythm in normal, subnormal and autistic children." British J. Psychol. 114, 603.

Hermelin, B. and O'Connor (1970). Psychological Experiments with Autistic Children. Pergamon Press.

Hermelin, B. (1971). "Rules and language." in Rutter, M. (ed.), Infantile Autism: Concepts, Characteristics and Treatment. London, Churchill.

Hewett, F.M. (1965). "Teaching speech to an autistic child through operant conditioning." Am. J. Orthopsychiat. 35, 927.

Hewett, F.M. and Forness, S. (1967). (revised edition). The Education of Exceptional Learners. Boston, Allyn and Bacon.

Hirsch de, K. (1970). "A review of early language development." Devel. Med. Child. Neurol. 12, 87-97.

Hirst, P.H. (1967). "The logical and psychological aspects of teaching a subject." in Peters, R.S., The Concept of Education. Routledge, Kegan Paul.

Horstmeier, D., MacDonald, J.D. and Gillette, Y. (1975). Ready, Set, Go: Talk to Me. (A handbook for the teaching of pre-language and early language skills; designed for parents and professionals) The Nisonger Centre, Ohio State University. See Nisonger Program.

Horton, K.B. (1974). "Infant intervention and language learning." Chapter 18 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Howlin, R., Cantwell, D., Marchant, R., Berger, M. and Rutter, M. (1973). "Analyzing mothers' speech to young autistic children: a methodological study." J. Abnorm. Child Psychol. 1, 317-339.

Hubel, D.H. and Wiesel, T.N. (1962). "Receptive fields, binocular interaction and functional architecture in the cat's visual cortex." J. Physiol. 160, 106-154.

Hubel, D.H. and Wiesel, T.W. (1963). J. Neurol. Physiol. Vol. 26, 996.

Hutt, E. (1976). Systematic sequential instruction. Invalid Children's Aid Association, London.

Ingram, D. (1976). Phonological Disabilities in Children; Studies in Language Disability and Remediation 2. Edward Arnold, London.

Ingram, T.T.S. (1959a). "Specific developmental disorders of speech in childhood." Brain. 82, 450.

Ingram, T.T.S. (1959b). "A description and classification of the common disorders of speech in children." Archives Diseases Child. 34, 444.

Ingram, T.T.S. (1960). "Perceptual disorders causing dyslexia and dysgraphia in cerebral palsy." Child Neurol and Cerebral Palsy Study Group. (U.K.).

Ingram, T.T.S. (1963). "The association of speech retardation and educational difficulties." Proc. Royal Soc. Med. 56, 7.

Inhelder. B. (1976). "Observations on the spatial and figurative aspects of Thought in dysphasic children." in Morehead, D.M. and Morehead, A.E. (eds.) Normal and Deficient Child Language. University Park Press.

International Classification of Diseases. (9th ed.) 308.0 Infantile Autism.

Irwin, J.V. and Marge, M. (eds.) 1972. Principles of Childhood Language Disabilities. Appleton Century.

Israel, M.L. (1976). "Educational approaches at the Behavior Research Institute, Providence, Rhode Island." in Ritvo, E.R. (ed.) Autism, Diagnosis, Current Research and Management. Spectrum Publications.

Jakobson, R. and Halle, M. (1956). Fundamentals of Language. The Hague, Mouton.

Jakobson, R. (1968). Child Language, Aphasia and Phonological Universals. The Hague, Mouton.

Johnson, D.J. (1975). "Children with Communicative Disorders." in Gallagher, J.A. (ed.), The Application of Child Development Research to Exceptional Children. Council for Exceptional Children. pp. 360-373.

Johnson, J.R. and Schery, T.K. (1976). "The use of grammatical morphemes by children with communication disorders." in Morehead, D.M. and Morehead, A.E. (eds.) Normal and Deficient Child Language. University Park Press.

Kanner, L. (1943). "Autistic disturbance of affective contact." The Nervous Child. 2, 217-250.

Kanner, L. (1946). "Irrelevant and metaphorical language in early infantile autism." American J. of Psychiatry. 103, 242-246.

Kanner, L. and Eisenberg, L. (1955). "Notes on follow-up studies of autistic children." in Hoch, D. and Zubin, J. (eds.) Psychopathology of Childhood. N.Y. Grune and Stratton.

Kanner, L. (1957). Child Psychiatry. 3rd ed. Thomas, Springfield.

Kass, C.E. (1977). "Dyssymbolia - A New Definition for L.D." Journal of Learning Dis. 10, 425-432.

Kellmer-Pringle, M.L. (1965). 11,000 Seven Year Olds. Bureau for Co-operation in Child Care, London, U.K.

Kelly, G. (1955). The Psychology of Human Constructs. Norton, N.Y.

Kent, L.R., Klein, D., Falk, A. and Guenther, H. (1972). "A language acquisition program for the retarded." Chapter 8 in McLean, J.E. et. al Language Intervention with the Retarded. University Park Press.

Kent, L.R. (1974). Language Acquisition Program for the Retarded or Multiply Handicapped. Research Press, Champaign, Ill.

Kessel, F.S. (1970). "The role of syntax in children's comprehension from ages six to ten." Monographs of the Society for Research in Child Devel. 35 #6, Series no. 139.

Klasen, E. (1972). The Syndrome of Specific Dyslexia. University Park Press.

Kleffner, F.R. (1973). Language Disorders in Children. Bobbs-Merrill Studies in Communication Disorders.

Koegel, R. and Wilhelm, H. (1973). "Selective responding to multiple visual cues by autistic children." J. of Experiment. Chil. Psychol. 15 (3).

Koegel, R.L. and Rincover, A. (1974). "Treatment of psychotic children in a classroom environment I Learning in a large group." J. Applied Behavior Analysis. 7 45-60.

Kolvin, I. (1971). "Psychoses in childhood - a comparative study." in Rutter, M. (ed.), Infantile Autism: Concepts, Characteristics and Treatment. London. Churchill.

Konstantareas, M.M. (1977). "Simultaneous communication: an alternative to speech training with autistic children." Journal of Practical Approaches to Developmental Handicap. Vol 1, 1.

Kopchick, G.A. and Lloyd, L.L. (1976). "Total communication programming for the severely language impaired: a 24 hour approach." Chapter 12 in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Koupernik, C. (1971)."A pathogenic approach to infantile autism." in Rutter, M. (ed.), Infantile Autism: Concepts, Characteristics and Treatment. Churchill, Livingstone, London.

Lackner, J.R. (1976). "A developmental study of language behaviour in retarded children." in Morehead, D.M. and Morehead, A.E. (eds.), Normal and Deficient Child Language. University Park Press.

Landau and Kleffner (see Goldstein, R., Landau, W.M. and Kleffner, F.R.; 1958.) Neurologic assessment of deaf and aphasic children. Transactions Amer. Otologic Society 46 122-136.

Landman, W. (Principal, Helen Allison School). Practical guidance for those who work with autistic children. National Society for Autistic Children, 1a Golders Green Rd., London, U.K.

Lea, J. (1965). "A language scheme for children suffering from receptive aphasia." Speech Pathol. and Therapy. 8, 58.

Lea, J. (1970). The Colour Pattern Scheme: A method of remedial language teaching. Moor House School, Oxted, Surrey, U.K.

Lee, L.L. (1974). Developmental Sentence Analysis: A Grammatical Procedure for Speech and Language Clinicians. Northwestern University Press,

Lee, L., Koenigsknecht, R. and Mulhern, S.T. (1975). Interactive Language Development Teaching (The Clinical Presentation of Grammatical Structures). Northwestern University Press, Evanston, Ill. (Demonstration film of program available).

Lenneberg, E., Nichols, I. and Rosenberger, E. (1964). "Primitive stages of language development in mongolism." Proc. Assoc. Res. Nerv. and Mental Disorders. 42, 119-137.

Lerea, L. (1958). "Assessing language development. Journal Hearing and Speech Research. 1, 75.

Levett, L.M. (undated). "A method of communication for non-speaking severely subnormal children"(reprint). British Journal of Disorders of Communication.

Lewis, M.M. (1968). The Education of Deaf Children: The possible place of fingerspelling and signing. H.M.S.O. London.

Liberman, A.M. (1970). "The grammars of speech and language." Cognitive Psychology. 1, 301-323.

Liberman, A.M., Cooper, F.S., Shankweiler, D.P. and Studdert-Kennedy, M. (1967). "Perception of the speech code." Psychol. Review. 7, 431-461.

Lieberman, P. (1967). Intonation, Perception and Language. Cambridge M.I.T. Press.

Leonard, L.B. (1972). "What is deviant language?" J. Speech and Hearing Disorders. 37, 427-446.

Lloyd, L. (ed.) (1976). Communication Assessment and Intervention Strategies. University Park Press.

Loban, W. (1963). The Language of Elementary School Children, Research Report 1. National Council of Teachers of English, Champaign, Ill.

Lockyer, L. and Rutter, M. (1969). "A five to fifteen year follow up study of infantile psychosis III." British J. Psychiat. 115, 865.

Lockyer, L. and Rutter, M. (1970). "A five to fifteen year follow up study of infantile psychosis IV Patterns of ability." British J. Soc. and Clinic. Psychol. 9, 152.

Los Angeles County (1977). Language Based Autism Program Vol. 1 Curriculum Vol. III Pupil Management; In-Service Support Programs. Office of the Los Angeles County Superintendent of Schools.

Lotter, V. (1966). "Epidemiology of autistic conditions in young children I. Prevalence." Social Psychiatry. 1, 124-137.

Lotter, V. (1967). "Epidemiology of autistic conditions in young children II Some characteristics of the parents and children." Social Psychiatry. 163-173.

Lovaas, O.I. (1966). "A program for the establishment of speech in psychotic children." in Wing, J. (ed.), Childhood Autism. 2nd ed. Pergamon.

Lovaas, O.I., Berberich, J.P., Perloff, B.F. and Schaeffer, B. (1966). "Acquisition of imitative speech by schizophrenic children." Science. 151, 705-707.

Lovaas, O., Schriebman, L., Koegel, R and Rehm, R. (1971). "Selective responding by autistic children to multiple sensory input." J. Abnormal and Social Psychol. 77, 211-222.

Lovaas, O.I., Koegel, R., Simmons, J.Q., and Ong, J.S. (1973). "Some generalization and follow-up measures on autistic children in behavior therapy." J. Appl. Behavior Analysis. 6, 131.

Lovaas, O.I. (1977). The Autistic Child: Language Development Through Behavior Modification. Irvington Publications Inc. N.Y.

Lovell, K. and Dixon, E.M. (1967). "The growth of the control of grammar in imitation, comprehension and production." J. Psychol. and Psychiat. 8, 31.

Lowe, A.D. and Campbell, R.A. (1965). "Temporal discrimination in aphasoid and normal children." J. of Speech and Hearing Research. 8, 313-314.

Lumsden, E.A. and Poteat, B.W.S. (1968). "The salience of the vertical dimension in the concept of "bigger" in five and six year olds." J. of Verbal Learning and Verbal Behavior. 7, 404-408.

Luria, A.R. and Yudovitch, F. (1959). Speech and the Development of Mental Processes in the Child. Staples Press, London.

Luria, A.R. (1961). The Role of Speech in the Regulation of Normal and Abnormal Behaviour. Pergamon.

Luria, A.R. (1971). The Working Brain. Penguin.

Lynch, J. and Bricker, W.A. (1972). "Linguistic theory and operant procedures: toward an integrated approach to language training for the mentally retarded." Mental Retardation. 10, 12-17.

MacDonald, J.D. and Blott, J.P. (1974). "Environmental language intervention: the rationale for a diagnostic and training strategy through rules, context and generalization." J. Speech and Hearing Disorders. 39, 244-256.

Mackay, in Wing, J.K. (1976). Early Childhood Autism: Clinical, Educational and Social Aspects. Pergamon.

MacKeith, R.C., and Rutter, M. (1972). "A note on the prevalence of speech and language disorders." in Rutter, M. and Martin, J.A.M. (eds.) The Child with Delayed Speech. Clinics in Devel. Medicine #43, Spastics International Medical Publications.

McCawley, J.D. (1968). "The role of semantics in a grammar." in Bach, E. and Harms, R.T. (eds.), Universals in Linguistic Theory. Holt Rinehart.

McGinnis, M.E. (1963). Aphasic Children: Identification and Education by the Association Method. Washington.

McGinnis, M.E., Kleffner, F.R. and Goldstein, R. (1963). Teaching aphasic children. The Volta Bureau, 1517 35th St. N., Washington, D.C. Report #677.

McLean, J.E. Yoder, D.E. and Schiefelbusch, R.L. (1972). *Language Intervention with the Retarded*. University Park Press.

McNeill, D. (1970). *The Acquisition of Language: The study of developmental psycholinguistics*. Harper and Row.

McNeill, D. (1970). "The development of language." in Mussen, P.H. (ed.), *Carmichael's Manual of Child Psychology*. 3rd ed. Vol. 1. Wiley.

McReynolds, L.V. (1966). "Operant conditioning for investigating speech sound discrimination in aphasic children" *J. of Speech and Hearing Disorders*. 9, 519,-528.

McReynolds, L.V. (ed.) (1974). "Developing Systematic Procedures for Training Children's Language." American Speech and Hearing Association Monograph #18.

Manitoba Teachers' Association (1974). *Evaluation of Student Achievement*.

Marshall, N.R. and Hegrenes, J.R. (1970). "Programmed communication therapy for autistic mentally retarded children." *J. Speech and Hearing Disorders*. 35, 70-83.

Marshall, N.R. and Hegrenes, J.R. (1972). "The use of written language as a communication system for an autistic child." *J. of Speech and Hearing Disorders*. 37, 258-261.

Martin, J.A.M. (1971). "Problems of diagnosis of hearing loss in the young child." *Proc. Roy. Soc. Med.* 64, 571.

Martin, Ruth (1975). "Where Are They Now?" Survey of adolescent autistic school leavers in the Inner London Education Authority area. (xeroxed).

Masland, M.W. and Case, L.W. (undated). "Limitation of auditory memory as a factor in delayed language development." *British Journal of Disorders of Communication*.

Matheny, A.P. (1968). "Pathological echoic responses in a child: effect of environmental mand and tact control." *J. Exp. Child Psychol.* 6. #4, 624-631.

Menyuk, P. (1964). "Comparison of the grammar of children with functionally deviant and normal speech." *J. Speech and Hearing Research*. 7, 109-121.

Menyuk, P. (1969). *Sentences Children Use*. Cambridge M.I.T. Press.

Menyuk, P. (1971). *The Acquisition and Development of Language*. Englewood Cliffs, Prentice Hall.

Menyuk, P. (1974). "Early development of receptive language: from babbling to words." Chapter 8 in Schiefelbusch, R.L. and Lloyd, L. (eds.), *Language Perspectives: Acquisition, Retardation and Intervention*. University Park Press.

Menyuk, and Looney, P.L. (1976). "A problem of language disorder: length versus structure." in Morehead, D.M. and Morehead, A.E. (eds.), *Normal and Deficient Child Language*. University Park Press.

Messer, S. (1967). "Implicit phonology in children." J. of Verbal Learning and Verbal Behavior. 6, 609-613.

Miller, J.F. and Yoder, D.E. (1972). "A syntax teaching program." in McLean, J.E. et. al. (eds.), Language Intervention with the Retarded: Developing Strategies. University Park Press.

Miller, W.R. and Ervin, S.M. (1971). "The development of grammar in child language." in Bar-Adon, A. and Leopold, W.F. (eds.), Child Language: A Book of Readings. Prentice Hall.

Miller, J.F. and Yoder, D.E. (1974). "An ontogenetic language teaching strategy for retarded children." Chapter 20 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Minifie, R., Darley, F. and Sherman, D. (1963). "Temporal reliability of seven language measures." J. Speech and Hearing Research. 6, 139-148.

Ministry of Education, Ontario (1976). "Evaluation of Student Achievement: A resource guide for teachers." (xeroxed).

Minski, L. (undated). An Investigation of Non-communicating Children. Public Health (Britain), 76#1.

Mitchell, D. (1976). "Parent-child interaction in the mentally handicapped." Chapter 10 in Berry, P. (ed.) Language and Communication in the Mentally Handicapped. University Park Press.

Mittler, P.J. (ed.) (1967). Aspects of Autism. British Psychological Society.

Mittler, P. (1970). "Language Disorders." in Mittler, P. (ed.). Psychological Assessment of Mental and Physical Handicaps. Methuen, London.

Mittler, P. (1975). Bibliography. Hester Adrian Research Centre for the Study of Processes in the Mentally Retarded." Manchester University. (xeroxed).

Mordock, J.B. (1975). The Other Children: An Introduction to Exceptionality. Harper and Row. Chapters 2 and 4.

Morehead, D.M. and Morehead, A.E. (1976). Normal and Deficient Child Language. University Park Press.

Morehead, D.M. and Ingram, D. (1976). "The development of base syntax in normal and linguistically deviant children." in Morehead, D.M. and Morehead, A.E. (eds.), Normal and Deficient Child Language. University Park Press.

Moores, D. (1969). "Cued speech: some practical and theoretical considerations." Amer. Ann. Deaf. 114, 23-27.

Moores, D.F. (1974). "Non-vocal systems of verbal behavior." Chapter 15 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Moor House School (1970). "A Report on a Follow-up of Ten Receptive Aphasic Ex-Pupils of Moor House School." (private publication).

Morris, C. (1946). Signs, Language and Behavior. Prentice Hall.

Morse, P.A. "The discrimination of speech and non-speech stimuli in early infancy." J. Exp. Child. Psychol. 14, 477-492.

Moskowitz, A. (1970). "The two-year-old stage in the acquisition of English phonology." Language. 46, 426-441.

Moskowitz, A. (1973). "On the status of vowel shift in English." in Moore, T. (ed.), Cognitive Development and the Acquisition of Language. N.Y. Academic Press.

Muma, J. (1971). "Syntax of preschool fluent and dysfluent speech." J. Speech and Hearing Research. 14, 428-441.

Murphy, K. (1964). "Development of normal vocalization and speech." in Renfrew, C. and Murphy, K. (eds.), The Child Who Does Not Talk. Clinics in Developmental Medicine #13, Heinemann.

Murphy, K. (1969). "Differential diagnosis of impaired hearing in children." Devel. Med. Child. Neurol. 11, 561-568.

Murray, S. (1972). "Investigation of three teaching methods for language training." Unpublished doctoral dissertation, University of Kansas. (referred to by Ruder and Smith (1974) q.v.)

Myklebust, H.R. (1954). Auditory Disorders in Children. N.Y. Grune and Stratton.

Nash, R. (1973). Classrooms Observed. Routledge and Kegan Paul, London.

Needels, F. and Jamieson, C. (1971). "Educational Approaches at the Los Angeles County Autism Project." Chapter 15 in Ritvo, E.R., Autism: Diagnosis, Current Research and Management. Spectrum Publishers.

Neimark, E.D. (1970a). "Development of comprehension of logical connectives: understanding of 'or'." Psychonomic Science. 21, 217-219.

Neimark, E.D. and Slotnick, N.S. (1970b). "Developmental understanding of logical connectives." Journal of Educational Psychology. 61, 451-460.

Nelson, K. (1973). "Structure and strategy in learning to talk." Monograph of the Society for Research in Child Development." Vol.38, #1 - 2, Serial No. 149.

Nelson, K. (1974). "Concept, word and sentence: interrelations in acquisition and development." Psych. Rev., 81, 4, 267-285.

Nelson, R. and Evans, I.M. (1968). "The combination of learning principles and speech therapy techniques in the treatment of non-communicating children." J. Child Psychol. and Psychiat. 9, 111.

O'Connor, N. andHermelin, B. (1963a). "Sensory dominance in autistic children and subnormal controls." Behavior Research and Therapy. 6, 37.

O'Connor, N. and Hermelin, B. (1963b). Speech and Thought in Severe Subnormality. Pergamon Press.

O'Connor, N. and Hermelin, B. (1971). "Cognitive deficits in children." British Medical Bulletin. Vol. 27 #3, 227-231.

O'Connor, N. (1975). "Cognitive processes and language ability in the severely retarded." in Foundations of Language Development. Vol. 1, UNESCO.

O'Donnell, R.C., Griffin, W.J. and Norris, P.C, (1967). "Syntax of Kindergarten and Elementary School Children: A Transformational Analysis." Research Report #8, National Council of Teachers of English, Champaign, Ill.

Ontario Speech and Hearing Association (1974). Survey of Speech and Hearing Services in Ontario 1973-4.

Osgood, C.E., Suci, G.J. and Tannenbaum, P.H. (1957). The Measurement of Meaning. University of Illinois Press.

Osgood, C.E. and Miron, M.S. (1964). Approaches to the Study of Aphasia. University of Illinois Press.

Paget, R. and Gorman (1968). A Systematic Sign Language. National Institute for the Deaf. London.

Palermo, D. and Molfese, D. (1972). "Language acquisition from age five onwards." Psychol. Bulletin. 78, 409-428.

Pasamanick, B. and Knobloch, H. (1961). "Epidemiological studies on the complications of pregnancy and the birth process." in Caplan, G. (ed.), Prevention of Mental Disorders in Childhood. Basic Books, N.Y.

Pierce, S. and Bartolucci, G. (1976). "A syntactic investigation of verbal autistic, mentally retarded and normal children." Paper presented to First Annual Conference on Language Development, October 1976.

Pirsig, R.M. (1974). Zen and the Art of Motor Cycle Maintenance. Corgi Books.

Poppen, R. et. al. (1969). "Visual sequencing performance of aphasic children." J. Speech and Hearing Research. 12, 288-300.

Premack, D. (1970). "A functional analysis of language." J. Exp. Analysis Behavior. 14, 107.

Premack, D. and Premack, A.J. (1974). "Teaching visual language to apes and language-deficient persons." Chapter 14 in Schiefelbusch, R.L. and Lloyd, L., Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Pronovost, W., Wakstein, M.P. and Wakstein, D.J. (1966). "A longitudinal study of speech behavior and language comprehension of fourteen children diagnosed atypical or autistic." Exceptional Children. 33, 19-26.

Quirk Report. Department of Education and Science, U.K. (1972). Speech Therapy Services, H.M.S.O. London.

Quirk, R., Greenbaum, S., Leech, G. and Svartvik, J. (1972). A Grammar of Contemporary English. Longmans, London.

Rees, N.S. (1971). "Bases of decision in language training." J. Speech and Hearing Disorders. 36, 283-304.

Rees, N.S. (1973). "Auditory processing factors in language disorders: The view from Procrustes bed." J. of Speech and Hearing Disorders. 38, 304-315.

Reynell, J. (1969a). Developmental Language Scale. National Foundation for Educational Research. Slough, Bucks, U.K.

Reynell, J. (1969b). "A developmental approach to language disorders." British Journal of Disorders of Communication.

Ricks, D.M. (1974). "Vocal communication in pre-verbal normal and autistic children." in O'Connor, N. (ed.) Language, Cognitive Deficits and Retardation. Butterworth, London.

Rimland, G. (1964). Infantile Autism. N.Y. Appleton Century.

Risley, T. and Wolf, M. (1967). "Establishing functional speech in echolalic children." Behaviour Research and Therapy. 5, 73.

Ritvo, E.R. (ed.) (1976). Autism: Diagnosis, Current Research and Management. Spectrum Press Inc. N.Y.

Roberts, M. (1977). Report on: (1) Perception, Organization Screening Inventory; (2) Fine Visual-Motor Screening Inventory Tests. Sir James Whitney School, Belleville (xeroxed report).

Robinson, H. and Robinson, N.M. (1975). The Mentally Retarded Child: A Psychological Approach. McGraw-Hill.

Rosenthal, W.S. (1972). in Eisenson, J. Aphasia in Children. Harper and Row.

Rosenthal, W.S., Eisenson, J. and Luckau, J.M. (1972). "A statistical test of the validity of diagnostic categories used in childhood language disorders: implications for assessment proceudres. PRCLD 4, 121-141.

Ruder, K.F. and Smith, M.D. (1974). "Issues in language training." Chapter 22 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Ruder, K., Bricker, W.A. and Ruder, C. (1975). "Language Acquisition." in Gallagher, J.A. (ed.), The Application of Child Development Research to Exceptional Children. Council for Exceptional Children. pp. 2-39.

Rutter, M. (1965). "The influence of organic andemotional factors on the origin, nature, and outcome of childhood psychosis." Dev. Med. Child Neurol. 7, 518.

Rutter, M. (1966a). "Behaviour and cognitive characteristics of a series of psychotic children." in Wing, J.K. (ed.), Early Childhood Autism. Pergamon.

Rutter, M. (1966b). "Prognosis: psychotic children in adolescence and early adult life." in Wing, J.K. (ed.), Early Childhood Autism. Pergamon.

Rutter, M. (1967). "Concepts of autism." in Mittler, P.J. (ed.), Aspects of Autism. British Psychological Society.

Rutter, M. and Lockyer, L. (1967a). "A five to fifteen year follow-up study of infantile psychosis I Description of sample." Brit. J. of Psychiatry. 113, 1169-1183.

Rutter, M. and Lockyer, L. (1967b). "A five to fifteen year follow up study of infantile psychosis II Social and behavioural outcomes." British J. Psychiat. 113, 1183.

Rutter, M. (1968). "Concepts of autism: a review of research." J. Child Psychol. and Psychiat. 9, 1-25.

Rutter, M. (1970a). "Autism-concepts and consequences." Special Education. (Britain), 59, 20.

Rutter, M. (1970b). "Autism - educational issues." Special Education. (Britain), 59, 6.

Rutter, M. (1970c). "Autistic children: infancy to childhood." Semin. Psychiat. 2, 435.

Rutter, M., Tizard, J. and Whitmore, K. (1970d). Education, Health and Behaviour. Longmans, London.

Rutter, M. (1971). "The description and classification of infantile autism." in Churchill, D.W., Alpern, G.D. and DeMyer, M., Infantile Autism, Proceedings. Indiana University Colloquium.

Rutter, M. and Bartak, L. (1971). "Causes of infantile autism: some considerations from recent research." J. of Autism and Childhood Schizophrenia. 1, 20-23.

Rutter, M., Bartak, L. and Newman, S. (1971). "Autism: a central disorder of cognition and language." in Rutter, M. (ed.), Infantile Autism, Concepts, Characteristics and Treatment. London, Churchill Livingstone, 148-171.

Rutter, M. and Sussenwein, F. (1971). "A developmental and behavioural approach to the treatment of preschool autistic children." J. of Autism and Childhood Schizophrenia. 376-397.

Rutter, M. (1972a). "Psychiatric causes of language retardation." in Rutter, M. and Martin, J.A.M. (eds.), The Child with Delayed Speech. Clinics in Developmental Medicine #43, Heinemann.

Rutter, M. (1972b). "The Assessment and Treatment of Pre-School Autistic Children." Occasional Papers #5, The National Society for Autistic Children, la Golders Green Rd., London, U.K.

Rutter, M. (1972c). "Clinical assessment of language disorders." in Rutter, M. and Martin, J.A.M. (eds.), The Child with Delayed Speech. Clinics in Devel. Medicine, #43, Spastics International Medical Publications.

Rutter, M. and Bax, M. (1972d). "Normal development of speech and language." in Rutter, M. and Martin, J.A.M. (eds.), The Child with Delayed Speech. Clinics in Devel. Medicine, #43, Spastics International Medical Publications.

Rutter, M. and Martin, J.A.M. (eds.), (1972e). The Child with Delayed Speech. Clinics in Devel. Medicine #43, Spastics International Medical Publications, Heinemann.

Rutter, M. and Bartak, L. (1973). "Special educational treatment of autistic children II Follow up of findings and implications for services." J. Child Psychol. and Psychiat. 12, 41.

Santa Barbara County Autism Dissemination Project (1976). Donnellan-Walsh, A., Gossage, L.D., LaVigna, G.W., Schuler, A. and Traphagen, J.D., Teaching Makes a Difference. (A guide for developing successful classes for autistic and other severely handicapped children.) Teachers manual.

Sarno, M.T. (ed.) (1972). Aphasia: Selected Readings. Appleton Century Crofts.

Savage, V.A. (1968). "Childhood autism: a review of the literature with particular reference to the speech and language structure of the autistic child." British J. Disorders of Communication. 3, 75.

Savage, V.A. (1971). "An approach to treatment in the young autistic child." in Rutter, M. (ed.), Infantile Autism: Concept, Characteristics and Treatment. Churchill Livingstone, London.

Savage, V.A. (1972). "Non-talkers: therapy in the preschool years." in Rutter, M. and Martin, J.A.M. (eds.), The Child with Delayed Speech. Clinics in Developmental Medicine #43, Heinemann, p. 238-243.

Savage, V.A. (1975). in Everard, P. (ed.), An Approach to Teaching Autistic Children. Pergamon.

Savin, H.B. and Bever, T.G. (1970). "The non-perceptual reality of the phoneme." Journal of Verbal Learning and Verbal Behaviour. 9, 295-302.

Schiefelbusch, R.L. (1974). Summary: Chapter 25 in Schiefelbusch, R.L. and Lloyd, L. (eds.), Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Schlesinger, I.M. (1971). "Production of utterances and language acquisition." in Slobin, D.I. (ed.), The Ontogenesis of Grammar. N.Y. Academic Press.

Schlesinger, I.M. (1974). "Relational concepts underlying language." in Schiefelbusch, R.L. and Lloyd, L., Language Perspectives: Acquisition, Retardation and Intervention. University Park Press.

Scholes, R., "On functors and contentives in children's imitation of word strings." J. of Verbal Learning and Verbal Behavior. 9, 167-170.

Schopler, E. and Reichler, R.J. (1971). "Problems in the developmental assessment of psychotic children." Excerpta Medica International Congress Series #274, Psychiatry. (Part II) Proceedings of Vth World Congress of Psychiatry, Mexico.

Schopler, E. and Reichler, R.J. (1971). "Parents as co-therapists in the treatment of psychotic children." J. of Autism and Childhood Schizophrenia." 1, 1, 87-102.

Schwartz, L. (1971). "A clinical teacher model of interrelated areas of special education." Exceptional Children. 37, 565-571.

Selfe, L. (1977). Nadia. Academic Press., U.K.

Sheehan, J.G., Aseltine, S., and Edwards, A.E. (1973). "Aphasic comprehension of time spacing." J. Speech and Hearing Research. 16, 650-657.

Sheridan, M.D. (1964). "Development of auditory attention and the use of language symbols" in Renfrew, C. and Murphy, K. (eds.), The Child Who Does Not Talk. Clinics in Developmental Medicine #13, Heinemann, London.

Sheridan, M.D. (1968). The Developmental Progress of Infants and Young Children. Ministry of Health, U.K., H.M.S.O., London.

Sheridan, M.D. (1969). "Playthings in the development of language." Health Trends. 1, 7.

Sheridan, M.D. (1972). "The child's acquisition of codes for personal and inter-personal communication." Chapter 16 in Rutter, M. and Martin, J.A.M., The Child With Delayed Speech. Clinics in Developmental Medicine #43, Heinemann.

Shriner, T.H., Halloway, M.S. and Daniloff, R.G. (1969)., "The relationship between articulatory deficits and syntax in speech defective children." J. Speech and Hearing Research. 12, 319-325.

Shumaker, J. and Sherman, J.A. (1970). "Training generative verb usage by imitative and reinforcement procedures." J. Applied Behavior Analysis. 3, 273-287.

Shvachkin, N.K.H. (1966). "Development of phonemic speech perception in early childhood." in Smith, F. and Miller, G.A. (eds.), The Genesis of Language. Cambridge, M.I.T.

Siegel, G.M. (1967). "Interpersonal approaches to the study of communication disorders." J. Speech and Hearing Disorders. 32, 112-130.

Siegel, G.M. and Broen, P.A. (1976). "Language Assessment." Chapter 3 in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Sigelman, C.K. and Bensberg, G.J. (1976). Chapter 16, "Supportive personnel for the developmentally disabled." in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Simpson, E. (1972). "Services for the child with delayed speech." in Rutter, M. and Martin, J.A.M. (eds.), The Child with Delayed Speech. Clinics in Developmental Medicine #43, Heinemann, pp. 253-258.

Sinclair, H. (1971). "Sensori-motor action patterns as a condition for the acquisition of syntax." in Huxley, R. and Ingram, E. (eds.), Language Acquisition: Models and Methods. Academic Press, N.Y.

Sinclair de Zwart, H. (1969). "Developmental psychological linguistics." in Elkind, D. and Flavell, (eds.), Studies in Cognitive Development. Oxford University Press, London.

Sloane, H. and MacAulay, B. (eds.) (1968). Operant Procedures in Remedial Speech and Language Training. Boston, Houghton-Mifflin.

Slobin, D. (ed.) (1971a). The Ontogenesis of Grammar. N.Y. Academic Press.

Slobin, D.I. (1976b). Psycholinguistics. Scott Foresman.

Slobin, D.I. (1973). "Cognitive prerequisites for the development of grammar." in Ferguson, C.A. and Slobin, D.I. (eds.), Studies of Child Language Development. N.Y. Holt Rinehart.

Slobin, D.I. and Welsh, C.I. (1973). "Elicited imitations as a research tool in developmental psycholinguistics." in Ferguson, C.A. and Slobin, D.I. (ed.), Studies of Child Language Development. Holt Rinehart, N.Y.

Smith, F.A. and Miller, G.A. (1966). The Genesis of Language: A Psycholinguistic Approach. Cambridge M.I.T. Press.

Snell, M. (1974). "Sign Language and Total Communication." in Kent, L.R., Language Acquisition Program for the Retarded or Multiply Impaired. Research Press, Champaign, Ill. Gives techniques and references.

Snow, C. (1972). "Mothers' speech to children learning language." Child Development. 43, 549-565.

Standards for Educators of Exceptional Children in Canada. (SEECC Report). Hardy, M.I., McLeod, J., Minto, H., Perkins, S.A. and Quance, W.R., Council for Exceptional Children, pp. 12-15, 43-44.

Stark, J.A. (1967). "A comparison of the performance of aphasic children on three sequencing tests." J. of Communication Disorders. 1, 31-34.

Stengel, E. (1947). "A clinical and psychological study of echo-reactions." J. Mental Science. 93, 593-612.

Stevens-Long, J. and Rasmussen, M. (1974). "The acquisition of simple and compound sentence structure in an autistic child." J. Applied Behavior Analysis. 7, 473-479.

Stokoe, W., Croneberg, C. and Casterline, D. (1965). A Dictionary of American Sign Language. Gallaudet College, Washington, D.C.

Stremel, K. and Ruder, K. (1973). "Utilization of grammatical expansions in language training". Bureau of Child Research Working Papers, University of Kansas, Lawrence.

Stremel, K. and Waryas, C. (1974). "A behavioral-psycholinguistic approach to language training." Chapter VI in McReynolds, L.V. (ed.), Developing Systematic Procedures for Training Children's Language. American Speech and Hearing Association Monograph #18.

Studdert-Kennedy, M. (1973). "The perception of speech." in Sebeok, T.A. (ed.) Current Trends in Linguistics. Vol. 12. The Hague, Mouton.

Swisher, L., Reichler, R.J. and Short, A. (1976a). "Language development history and change in autistic children." in Hirsh, S.K., Eldredge, D.H. Hirsh, S.R. and Silverman, S.R. (eds.). Hearing and Davis: Essays Honoring Hallowell Davis. Washington Univ. Press. Saint Louis, Missouri.

Swisher, L. (1976b). Language: Workshop on the Neurobiological Basis of Autism. National Institutes of Neurological and Communicative Disorders and Stroke, National Institutes of Health, Bethesda, Maryland, (MS, to be edited.)

Tallal, P. and Piercy, M. (1973). "Developmental aphasia: Impaired rate of non-verbal processing as a function of sensory modality. Neuropsychologia. 11, 389-398.

Tallal, P. and Piercy, M. (1974). "Developmental aphasia: Rate of auditory processing and selective impairment of consonant perception." Neuropsychologia. 18, 83-93.

Thomas, M.E. (undated reprint). "Assessment and treatment of receptive and executive aphasia in identical twin boys. British Journal of Disorders of Communication.

Travis, L.E. (ed.) (1957) (1971). Handbook of Speech Pathology. Appleton Century.

Tubbs, V.K. (1965). "Types of linguistic disability in psychotic children." J. Ment. Def. Res. 10, 230.

Turner, E.A. and Rommetveit, R. (1967a). "The acquisition of sentence voice and reversibility." Child. Devel. 38 649-660.

Turner, E.A. and Rommetveit, R. (1967b). "Experimental manipulation of the production of active and passive voice in children." Language and Speech. 10, 169-180.

Venetzky, R.L. and Weir, R. (1966). "A Study of Selected Spelling to Sound Correspondence Patterns." Cooperative Research Project, Stanford University.

de Villiers, J. and de Villiers, P. (1973). "A cross-sectional study of the acquisition of grammatical morphemes in child speech." J. Psycholinguistic Research. 2, 267-278.

Vogel, S. (1975). Syntactic Abilities in Normal and Dyslexic Children. University Park Press.

Vygotsky, L.S. (1962). Thought and Language. Wiley.

Wachs, T.D., Uzgiris, I.C. and Hunt, McV. (1971). "Cognitive development in infants of different age levels and from different environmental backgrounds: an explanatory investigation." Merrill-Palmer Quarterly Behav. Develop. 17, 283-317.

Wallach, G.P. (1977). "Cognitive and linguistic variables in learning disabilities: Implications for the speech pathologist. Conference Abstract; Ontario Speech and Hearing Association 1977.

Weener, P, Barrit, L.S., Semmel, M.I. (1967). "A critical evaluation of the Illinois Test of Psycholinguistic Abilities." Exceptional Child. 33, 373.

Weiner, P.S. (1969). "The perceptual level functioning of dysphasic children. Cortex. 5, 440.

Weiner, P.S. (1972). "The perceptual level functioning of dysphasic children: A follow-up study." J. of Speech and Hearing Research. 15, 423-438.

Weiss, J. et. al. (1972). "Formative Curriculum Evaluation." Ontario Institute for Studies in Education. (xeroxed.)

Whitacre, J.D., Luper, H.L. and Opilio, H.R. (1970). "General language deficits in children with articulation problems." Language and Speech. 13, 231-239.

White, M. (1972). "An experimental class for language-disordered children." in Rutter, M. and Martin, J.A.M., The Child with Delayed Speech. Clinics in Developmental Medicine #43, Heinemann.

Whitehurst, G., Novak, G. and Zorn, G. (1972). "Delayed speech studied in the home." Develop. Psychol. 7, 169-177.

Wilbur, R.B. (1976). "The linguistics of manual language and manual systems." in Lloyd, L. (ed.), Communication Assessment and Intervention Strategies. University Park Press.

Wilson, G.T., Hannon, A.E. and Evans, I.M. (1968). "Behaviour therapy and the therapist-patient relationship." J. Consult. Clin. Psychol. 32, 103.

Wilson, L.F., Doehring, D.G. and Hirsh, I.J. (1960). "Auditory discrimination learning by aphasic and non-aphasic children." J. Speech and Hearing Research. 3, 138-149.

Wilson, L.F. (1965). "Assessment of congenital aphasia." in Rappaport, S.R. (ed.), Childhood Aphasia and Brain Damage. Vol. 2, Differential Diagnosis, Livingston, Pennsylvania.

Wing, J. and L. (1966). "A clinical interpretation of remedial teaching." in Wing, J.K. (ed.) Early Childhood Autism. Pergamon.

Wing, J.K., O'Connor, N. and Lotter, V. (1967). "Autistic conditions in early childhood: A survey in Middlesex." British Medical Journal. 3, 389-392.

Wing, J.K. (ed.) (1974). Early Childhood Autism: Clinical, Educational and Social Aspects. Pergamon.

Wing, L. (1969). "The handicaps of autistic children: a comparative study." J. Child Psychol. and Psychiat. 10, 1.

Wing, L., Yeates, S.R., Brierley, L.M. and Gould, J. (1976). "The prevalence of early childhood autism: comparison of administrative and epidemiological studies." Psychological Medicine. 6, 89-100.

Winitz, H. (1969). Articulation, Acquisition and Behavior. N.Y. Appleton Century.

Winitz, H. (1973). "Problem-solving and the delaying of speech as strategies in the teaching of language." American Speech and Hearing Association. 15, 583-586.

Winitz, H. (1975). From Syllable to Conversation. University Park Press.

Wisland, M.V. (ed.) (1974). Psychoeducational Diagnosis of Exceptional Children. C.C. Thomas, Ill.

Withrow, F.B. (1964). "Immediate recall by aphasic, deaf and normal-hearing children for visual forms presented simultaneously or sequentially in time." American Speech and Hearing Association. 6, 386.

Witkin, H.A. et. al. (1962). Psychological Differentiation. Wiley.

Witkin, H.A. et. al. (1977). Field-dependent and field-independent cognitive styles and the educational implications." Review of Ed. Research. Vol. 47, 1-64.

Wolff, S. and Chess, S. (1965). "An analysis of the language of fourteen schizophrenic children." J. Chil. Psychol. and Psychiat. 6, 29.

Woodward, M. (1963). "The application of Piaget's theory to research in mental deficiency." in Ellis, N.R. (ed.), Handbook of Mental Deficiency. McGraw Hill.

Worster-Drought, C. (1968). "Speech disorders in children." Devel. Med. Chil. Neurol. 10, 427.

Worster-Drought, C. (1965). "Observations on congenital auditory imperception." The Teacher of the Deaf. 63, 4-11.

Wynne-Griffith, G. and Morgan, G.A.V. (1961). "Diagnostic imprecision as a factor in male mortality." J. of Social and Preventive Medicine.

Yoder, D.E. (1974). "Evaluation and assessment of children's language and speech behavior." in Wisland, M.V. (ed.), Psychoeducational Diagnosis of Exceptional Children. C.C. Thomas.

Zakharova, A.V. (1973). "Acquisition of forms of grammatical case by pre-school children." in Ferguson, C.A. and Slobin, D.I. (eds.), Studies of Language Development. Holt Rinehart.